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INDEX OF CONTENTS.

JANUARY TO JUNE, 1929.

(For Special Headings see under Answers to Correspondents; Books; Certificated Plants, etc.; Nursery Notes; Obituary; Plants New or Noteworthy; Societies; and Illustrations.)

A

Aberdeen's new glasshouses, 72
Aberdeenshire Horticultural Society—one hundred years ago, 321
Abbey Wood, Woolwich, 55
Abbiss, Mr. H. W., 472
Acacia verticillata, 27
Acaena microphylla, 78
Afforestation: in North Wicklow, 132; proposition, a novel, 395
Afforesting sandy wastes, 272
Agricultural Development Commission, grants by the, 197
Agricultural Research Bureaux, 304
Agricultural scholarships, 216
Ajuga metallica var. crispa, 78
Akebia quinata, 104
Albury Downs, Surrey, 216
Alchemilla alpina, 200
Aldenham House Gardens, 416
Allium Beesianum, 276
Allosorus crispus, 309
Allotment holders and unemployed pay, 435
Aloe supralaevis, 111
Alpine Campanulas, 292
Alpine garden, 6, 28, 44, 60, 78, 104, 116, 136, 158, 178, 200, 220, 242, 267, 276, 292, 309, 326, 344, 360, 379, 402, 422, 441, 461, 475
Alpine lawn, the, 100
Alpine plants, Sewell Medal for, 153
Alyssum Wulfenianum, 44
Alyssums, some, 200
Amaryllis Banksiana, 12
America, winter-flowering annuals in, 27, 206
American expedition to the Orient, 236
American gardens at Saltwood, 436
American Gooseberry mildew in Scotland, 436
American Peony Society, medal awards of the, 216
American roadsides, tree-planting of, 155
Amos, Mr. A. E., 92; (*The Gladiolus Annual*), 173
Amphicomes, 6
Androsace sempervivoides, 360
Anemone ranunculoides, 200, 276
Anemones, some April-flowering, 280
Anisotome (Ligusticum) latifolia, 345
Annuals, 76; hardy, 220; under glass in U.S.A., 206; winter-flowering, in America, 27

Answers to Correspondents:—

Abies, securing seeds of, 54; Allotment land, 254; Amaryllis (Hippeastrum) unhealthy, 151; Ants in Peach house, 469; Apple trees: cankered, 70; lichen on, 19; woolly aphis on, 19; Apples: Devonshire, 172; glassiness in, 19; Arbutus failing, 19; Arum Lilies: rot in, 90; treatment of, after flowering, 302; unhealthy, 254; Asparagus plumosus discoloured, 151; Association football ground, dimensions of, 70; Azalea japonica seeds, sowing, 19; Azaleas, Indian, 413; Basic slag for sports ground, 193; Beetroots blackened, 370; Begonia foliage unhealthy, 19, 286; Begonias and Cyclamens infested, 19; Brompton Stocks diseased, 193; Calcium chlorate and Bishop's-weed, 254; Carnations: border, 433; diseased, 54, 193, 370, 454, 469; perpetual, 338; Celery diseased 19, 286; Cheshunt compound, preparing, 354; Chrysanthemums: 354; rust of, 193; unhealthy, 19; Cinerarias failing, 193; Club root, control of with mercuric chloride, 286; Cockchafer grub in soil, 370; Coleus diseased, 90; Colletia teniculata, 286; Creepers for walls, 110; Creosote fumes and "scalded" foliage, 172; Cucumber house, insects in, 286; Cumberland natural grasses, 110; Cut flowers under glass, growing, 433; Cyclamens: attacked by thrips, 413; failing, 413; Daphne leaves discoloured, 130; Delphiniums, 19; Dielytra spectabilis, culture of, 151; Draughtsmanship, postal instruction in, 354; Egg plants (Aubergines), growing, 151; Freesia foliage mottled, 37; Fuchsia arborescens, 193; Gardener, head, and cottage, 70; Gardener's notice to leave, 151, 433; Gardener's wages during illness, 19; Grapes: Black Hamburgh, failing, 302; disfigured, 354; Greenhouse, boiler for heating a, 254; Hot-water pipes, difficulties with, 286; House fly, the, 370; Hyacinth bulb badly ripened, 338; Hyacinths: diseased, 54; failing, 193; Insects in Cucumber house, 286; Irises and Chrysanthemums, 19; Irises and Tulips, diseased, 214; Laburnum with yellow, creamy-purple and purple flowers, 454; Larkspurs failing, 172; Lawn grass unhealthy, 433; Lawn: making a, 130; Rat's-tails on, 433; Lease of a garden, 469; Licence for gardener, 19, 54; Lily pond, discoloured water in, 151, 433; Lonicera syringantha failing to flower, 151; Melon diseased, 370, 413, 454; Melons, Canteloupe, 394; Mercuric chloride, control of club root with, 286; Nectarine, die-back of, 214; Onions, stem eelworm in, 469; Orange leaves falling, 151, 214; Orchids from seeds, raising, 214; Peaches: and salt water, 354; newly planted, 469; setting badly, 370; shot-hole fungus of, 214; unhealthy, 318; Pelargonium unhealthy, 233, 302; Plants for shelter from north, 130; Plum trees failing to fruit, 110; Primrose foliage unhealthy, 270; Privet: cutting back, 270; hedge overhanging, 338; Rat's-tails on lawn, 433; Sodium chlorate as a weed-killer, 151; Softening hard water, 370; Soil in poor condition, 286; Statice profusa, propagation of, 193; Stocks suffering from foot-rot, 394; Strawberries failing, 54; Tennis court, construction of a hard, 270, 354; Tennis lawn grass, 354; Timber, fallen, 19; Tomatos: and foot-rot disease, 286; diseased, 214, 233, 413, 454, 469; scorched, 370; Trees, filling hollow, 338; Tulip bulbs diseased, 370; Tulips: diseased, 214, 286, 394, 413, 433; failing, 214; "fire" in, 338, 454; Vine, leaves unhealthy, 394, 433; Vines mildewed, 370; Viola foot-rot, 469; Wages: gardener's, during illness, 19; lads', 469; Yew tree stumps, destruction of, 302

Antennaria dioica, 44
Anthemis Cupaniana, 422
Anthurium Rothschildianum var. Excelsior, 93
Antirrhinums, 118
Antiseptic and cooling properties of volatile essential oils, 350
Aphelandra aurantiaca var. Roezlii, 137; A. tetragona, 324
Aphis, woolly, 127, 166
Appel, Prof. Otto (*Potato Varieties Immune to Wart Disease*), 206
Apple blossom destroyed, 429
Apple-blossom weevil, note on the, 393
Apple-growing, the rootstock problem in, 52, 144, 188
Apple-marketing in Canada, 155
Apple scab, 35
Apple trees, frost injury to, 209
Apples, bitter-pit of Australian, 436
Apples, varieties of: Adams's Pearmain, 211, 249; Ribston Pippin, 17, 35
Arable land, manuring, 314, 349, 369
Arbutus, the propagation of, 181
Arenaria balearica, 292, 344; A. Ledebouriana, 39; A. norvegica, 300, 350
Argemone grandiflora, 77
Aristea corymbosa, 222
Arnold Arboretum, wintry spring in the, 396
Arthropodium cirrhatum, 423
Asclepias tuberosa, 67
Asparagus, 166, 232
Asters as pot plants, 292
Astilbe koreana, 119
Astilbes, modern hybrid, 247
Astragalus utahensis, 327
Atkinson, Mr. William, V.M.H., 174
Auctioneers, a press guide for, 72
Autumn tints in Japan, 209
Azalea, a Japanese, 78
Azalea exhibition at Ghent, 22
Azalea indica in Japan, 6
Azaleas, Kurume, 244

B

Bacteria as indicators of soil fertility, 131
Baeckea frutescens, 369
Barberries, evergreen, 7
Barr and Sons, Messrs., 431
Barr, Peter, Memorial Cup, 287
Bartlett, A. C. (*Sweet Pea Annual*), 72
Bateson, William, 62; (*Letters from the Steppe*), 49
Beans, Runner, 350
Begonia Gloire de Lorraine, 260; B. ulmifolia, 96
Begonias for summer bedding, 98
Belgian centenary celebrations, 173
Belgian florists' banquet, 21
Belgian nurseryman, fatal accident to a, 197
Bellium minutum, 60
Berberidopsis corallina, 324
Bertolonias, 27
"Best Six," the, 175
Bidens dahlioides, 200
Biologists, Association of Economic, 40, 174, 437
Biologists, the shortage of, 131
Birds at Kenwood, 320
Birkenshaw, Mr. A., 56
Black Currant Daniels' September, 191
Black Currant Mite (Norfolk) Order of 1928, the, 39
Black Currant mite and lime-sulphur, 166
Blatter, E. (*Beautiful Flowers of Kashmir*, Vol. II), 86
Bledisloe, Lord, 40
Bluebell and Chestnut Sunday, 395
Bog and water garden, 246, 276, 327, 344, 365
Boilers, oil fuel for, 299
Bolting, on, 55
Bolus, H. M. Louisa (*Notes on Mesembrianthemum and Some Allied Genera*), 230

Books, Notices of :—Advertisers' Handbook (*W. H. Smith and Son*), 92; A Little Book of Conceited Secrets and Delights for Ladies (*Moira Meighn*), 364; Annual Report (*East Malling Research Station*), 372; Beautiful Flowers of Kashmir, Vol. II (*Ethelbert Blatter*), 86; Blonde or Brunette? (*H. S. Redgrove and G. A. Foan*), 447; Classified List of Daffodil Names (*Royal Horticultural Society*), 304; County Court Practice made easy, or Debt Collecting simplified (*A Solicitor*), 464; Einjahrsblumen (*Paul Kache* and *Camillo Schneider*), 330; Fertilisers and Manures (*Sir A. Daniel Hall*), 364; Fruit-growing projects (*Fred C. Sears*), 63; Garden Calendar and Diary (*Messrs. Sutton and Sons*), 56; Gladiolus Annual, the (*A. E. Amos*), 173 Handbook of Fertilisers (*A. F. Gustafson, Ph.D.*), 48; Hardy and Half-hardy Plants (*A. W. Darnell*), 395, 435; Irises (*F. F. Rockwell*), 160; Le Rosier, Historique, Culture en plein air et sous verre (*Ed. van Cauwenberghe*), 124; Letters from the Steppe (*William Bateson*), 49; Nature in Field and Meadow (*W. Percival Westall, F.L.S.*), 296; Notes on Mesembrianthemums and Some Allied Genera (*H. M. Louisa Bolus*), 230; Perfumes, Cosmetics and Soaps, with especial reference to Synthetics (*William A. Poucher*), 312; Potato Varieties Immune to Wart Disease (Ed. by *Professor Otto Appel*), 206; Rhododendron Year Book (*Rhododendron Association*), 371; Rose Annual (*The National Rose Society*), 235; Starch: its Chemistry, Technology and Uses (*Lewis Eynon* and *J. Henry Lane*), 206; Starting early Vegetable and Flowering Plants under glass (*Charles H. Nissley*), 348; Sweet Pea Annual (*A. C. Bartlett*), 72; Ten Months Abroad (*William Cuthbertson*), 22; The Book of the Tulip (*Sir A. Daniel Hall*), 404; The Crab Apples and Nectarines of Japan (*Yoshichi Asami*), 634; The Cultivation of Vegetables (*Ministry of Agriculture*), 55; The "Gardeners' Chronicle" of America, 435; The Gardeners' Year Book, 1929, (*D. H. Moutray Read*), 174; The Lilac (*Susan Delane McKelvey*), 281; The Pear and its Culture (*H. B. Tukey*), 16; The Plant Life of the Balkan Peninsula (*W. B. Turrill, M.Sc., F.L.S.*), 424

Borago laxiflora, 241
Botanical Conference, Imperial, 471
Botanical Society and Exchange Club of the British Isles, 273
Botanical tour in Cyprus, 356
Bougainvillea Mrs. Butt, 221
Bouvardias, 260
Bracken disease in Scotland, 56, 112
Bradgate Park acquired for the nation, 72
British Carnation Society's secretaryship, 153
British Mycological Society's Spring Foray, 236
British plants, notes on some, 164
British Science Guild, 288, 320
Broccoli: Cornish, for Germany, 22, 303; National Mark for, 175; the Canson Sprouting, 87
Bruckenthalia spiculifolia, 138
Brussels Sprouts, 232; culture of, 166
Buckinghamshire, new horticultural instructor for, 320
Buddleia alternifolia, 181; B. Davidii v. B. variabilis, 35
Bulb flies, 12
Bulb garden, 77, 116, 136, 180, 228, 276, 297, 349, 360, 401
Bulb industry in Holland, 356
Bulb mite, the, 106
Bulbs, British-grown, for British gardens, 271
Bunyard, Mr. Percy F., 289
Burgess, Mr. A. E., 272
Bury Hill Gardens, Dorking, 355
Bush fires near Adelaide, 216
Butomus umbellatus, 98

C

CACTI AND SUCCULENT PLANTS AT CHELSEA SHOW, 340
Cactus Society of America, 339
Calceolarias, herbaceous, 400; at Avory Hill, Eltham, 429
California, Eucalypti in, 2
Calliandra haematocephala, 180
Caltha palustris var. alba, 327
Camomile or scented lawn, the, 15
Campanula Kolenatiana, 178; C. lactiflora, 180; C. latifolia, 200
Campanulas, alpine, 263
Canada, Apple marketing in, 155
Canadian flowers and fruits, new, 300
Canson Sprouting Broccoli, the, 87
Capp, Mr. F., 456
Capsid bug, the common green, 217
Capsid injurious to Orchids, an introduced, 3
Cardamines, 246, 327
Carnation Spectrum, Memorial Medal awarded to, 132
Carnation *Year Book*, 340
Carnations: border, 102, 184; new, 125; in public parks, 132; perpetual-flowering, 241; perpetual-flowering, from seeds, 145; registered with the American Carnation Society, 1928, 235
Carrot, Onion and Cabbage root-flies, control of, 250
Cauliflowers, 284, 334
Cauwenberghe, Ed. van (*Le Rosier, Historique, Culture en plein air et sous verre*), 124
Cavendish family and the R.H.S., 341
Celery, 167, 448; marketing, 304
Celosia plumosa, 324
Celsia Arcturus, 440
Centaureas, hardy, 345
Cereal symbiosis, 395

Certificated Plants :—

Adaglossum Pittsii, 69; Anemone St. Brigid var. Mary Seton, 316; Ansellia congoensis, Witley var., 284; Anthurium Rothschildianum var. Excelsior, 89; A. Scherzerianum var. Ne Plus Ultra, 352; Aponogeton leptostachyum var. lilacina, 385; Astragalus utahensis, 316; Begonia Mrs. J. Raeburn Mann, 385; Brasso-Cattleya Apollo var. majestica, 338; B.-C. British Queen var. Renown, 18; B.-C. Doris, Langley var., 338; B.-C. Orange Glory, 383; B.-C. Prince Olaf, 252; B.-C. Springtide, Stonehurst var., 316; B.-C. Springtide var. The Node, 284; B.-C. The Globe var. Mrs. Simon Gay, 383; Brasso-Laelio-Cattleya Gordon Highlander var. Majestic, 383; B.-L.-C. Vashti, 212; Calceolaria Benthami, 452; C. biflora, 452; Carnation: Flambeau, 452; Guy Allwood, 352; Kathleen, 89; Thomas Ives, 53; Cattleya Linda var. Vestal, 338; C. Prince Shimadzu var. King George, 383; C. Remy Chollet var. President, 168; C. Susan var. alba, 383; C. Susan var. Vestal, 338; Chiliotrichum rosmarinifolium, 452; Chrysanthemum: Bronze Conquest, 37; New Year, 37, 53; Clivia Ursula, 212; Cymbidium Albania, 53; C. Alexanderii var. Evansiae, 269; C. Doris var. maculatum, 18; C. Eagle, 338; C. Giant Rose, 338; C. Gold Crest, 212; C. Letty, Wyld Court var., 168; C. Marabou, Exbury var., 252; C. Matador, 18; C. Morvyth, Exbury variety, 168; C. Pipit var. Mandarin, 212; C. Plover, Wyld Court var., 252; C. Puffin var. Calypso, 252; C. Ralph Sander, Old Quarry variety, 212; C. Rosanna, 169; C. Vesta, 128; C. V. var. sanguinolentum, 252; Cynoglossum cashmerianum, 452; Cypripedium Alpha var. magnifica, 18; C. Amazon, 269; C. Anita var. Exquisita, 18; C. Aureades var. Whitecap, 269; C. bellatulum var. King George, 383; C. Elaine, 69; C. Elidia, 69; C. E. var. Cosmos, 69; C. Eurydore, 69; C. Golden Dawn, 87; C. Gwen Hanmer var. album, 269; C. Helsa var. Ingrid, 129; C. Huglii, 269; C. Jungfrau, Brockhurst var., 53; C. Kestrel, 69; C. Littlecot, 53; C. Lucinda var. Martin David Ramsay, 69; C. Maori, 87; C. Melody var. Vega, 87; C. Mena, 87; C. Mist o' the Moon, 87; C. Mona var. Dolcis, 69; C. Mona var. Virginale, 338; C. New Year, 69; C. Queen Mab var. Ariel, 18; C. Strombole, 53; C. Sumurun var. Snowball, 69; C. Volga, 269; C. Waratah var. Chieftain, 69; C. Windrush, 53; Daphne tangutica, 385; Dendrobium Gatton Monarch, 270; D. nobile, var. Towneley Monarch, 338; D. Prince Arthur var. Colossus, 383; D. Renown var. Carmen, 301; Dianthus Allwoodii var. Prudence, 316; D. Sweet Wivelsfield, 468; Dodecatheon splendidum var. Brilliant, 385; Erica australis var. Mr. Robert, 53; Freesia: Beauty, 212; Maryon, 212; Mrs. R. F. Felton, 212; Gordonia Lasianthus (?), 128; Grammatocarpus volubilis, 452; Heliophila linearifolia, 452; Hippeastrum Lady Juliet Duff, 316; Iris: Carfax, 450; Dog Rose, 450; Jane Austin, 450; Joan Curtis, 450; Jurion, 450; Trigo, 450; Yukon, 450; Laelio-Cattleya Berenice, 383; L.-C. Bungalow, 432; L.-C. Hassallii var. alba, Arddarroch var., 453; L.-C. Sunbelle. Brockhurst var., 168; L.-C; Titymona, 252; L.-C. Vega, 212, Lathyrus magellanicus, 452; Leucocoryne ixioides var. odorata, 252; Lewisia pygmaea, 452; Lissochilus speciosus, 383; Loasa acanthifolia, 352; Lobelia The Marvel, 481; Lycaste Skinneri, Wivelsfield var., 269; Magnolia Brozzonii, 384; Marcia gracilis, 284; Mertensia moltkioides, 316; Miltonia Hyeana var. King Harold, 433; M. H. var. King Henry, 433; M. H. var. King William, 432; M. Kennie var. Princess Elizabeth, 433; M. Lucia var. Molly Paterson, 252, 284; M. Lycaena, Orchidhurst var., 128; M. Nadia var. Helen Paterson, 252; M. S. André var. Distinction, 338; M. T. B. Armstrong, 383; M. vexillaria var. Duchess of York, 433; M. vexillaria var. Duke of York, 432; M. William Pitt, Baron Schröder's var., 316; Narcissus: Adventure, 300; Beersheba, 300; Bridegroom, 353; Brimstone, 353; Daphne, 352; Fanny Currey, 285; Finality, 391; Golden Ingot, 285; Huon, 353; Khatmandu, 391; May Glory, 391; May Molony, 300; Recessional, 352; Solleret, 300; Sunstar, 316; Triplex, 391; Whiteley Gem, 253; Odontioda Acis var. Radiant, 168; O. Bluebell, 284; O. Bradshawiae var. Perfecta, 432; O. Cardinal Mercier, 284; O. Colinge var. Evansiae, 270; O. Elaine, Jarvisbrook var., 338; O. Enterprise, 18; O. Freda, 433; O. Gwentara, 316; O. Laura, Exbury var., 383; O. Leeana var. Vivid, 383; O. Leonatus, 69; O. Louise, 432; O. Marie Antoinette var. excelsa, 316; O. Matador, 128; O. Mildred, 338; O. Prince Olaf, 382; O. Velasquez, 252; O. Zarina var. Brilliant, 383; Odontoglossum amabile, Jarvisbrook var., 338; O. crispum var. Osiris, 338; O. Doreen var. Perfection, 338; O. Harold var. Distinction, 168; O. Llewellyn var. Purple Gem, 432; O. Meredithiae, 270; O. mirum var. aureum, 89; O. m. var. Walden, 432; O. percultum, Jarvisbrook var., 338; O. Pescatorei var. Peachblossom, 270; O. Red Admiral var. Brilliant, 432; O. venustulum, Wivelsfield var., 270; Oenothera trichocalyx, 481; Omphalogramma sp. (K.W. 6,821), 316; Oncidium Boissyeana, 18; O. tigrinum, Towneley Grove var., 129; Ourisia alpina, 385, 443; Paeonia: Kelway's Remembrance, 468; Lord Kitchener, 468; Mlokosewitschii 385; Pentstemon procerum, 452; P. strictus, 481; P. P. utahensis, 452; Phaius Cooksonii var. magnificus, 432; Phalaenopsis amabilis var. Elisabethae, 212; P. Elizabethae, 338; P. Gilles Gratiot, 383; Primula hybrida var. Sir George Thursby, 385; Prunus nana, 352; Ramondia Nathaliae, 352; Rhododendron charitopes (?), 316; R. Delight, 252; R. euchaites, 252; R. Fortune's Triumph, 385; R. Houlstonii, 481; R. Keiskii, 337; R. sp. (K.W. 6,273), 128; R. Muriel Messel, 385; R. semanteum, 337; R. tephropeplum, 337; R. Vanessa, 384; Rose: Barbara Richards, 385; Duchess of Atholl, 481; Julien Potin, 315; Scyphanthus elegans, 452; Sophro-Laelio-Cattleya Gertrude Geidels, 284; S.-L.-C. Margrand var. Tangerine, 269; S.-L.-C. Yokohama, 352; Stapelia nobilis, 452; Statice profusa var. superba, 385; Streptanthera cuprea, 481; Trichopilia Hennessii, 433; Tropaeolum azureum, 352; Tulip: Clos de Vougeot, 391; Dorothy Ann, 391; Lady Ernle, 391; Vanda coerulea var. gigantea, 18; Viburnum Burkwoodii, 285.

Certificated Vegetables :—

Beans, dwarf French: Bounteous, 433; Canadian Wonder Improved, 433; Early Prolific, 433; Fifty Days, 433; Carrot: Carenton, 69; Early Guerande, 69; Intermediate Selected, 69; James' Intermediate, 69; Nantes Selected. 69; Perfection. 69

350856

Chelsea nurseries, old, 268, 334
Chelsea Physic Garden, 341
Chelsea Show: arrangements, 1929, 339, 355; Cacti and Succulent plants at, 340; rock gardens at, 407
Cherries: flowering, 420 466; Japanese, at Kew, 340; importation of, 416
Chestnut Sunday, Bluebell and, 395
Chile and the Andes, 224, 262, 294, 346, 445
Chiswick House Estate, 397
Chromosomes, concerning, 215
Chrysanthemum Congress at Béziers, 372
Chrysanthemum Show, Shanghai, 41
Chrysanthemum: number of florets in an exhibition, 107, 125, 145, 189; popularising the, 356; the noblest Japanese, 361
Chrysanthemums: and Gaillardias at Wisley, trials of, 174; a new disease of, 133; at Downhills Park, Tottenham, 23; disease in, 208; early-flowering, 60, 102, 188; early-flowering, trials of, 373; for large blooms, Japanese, 96; number of florets in, 107, 125, 145, 189
Church in a garden, a, 2
Cider inspection at Long Ashton, 288
Cinerarias, 61
Cistus corbariensis, 240
Clematises, double-flowered, 261
Clerodendron Thomsonae, 421
Clivia Ursula, 236
Clusia grandiflora, 158, 201
Coconut, the double, 320
Colonial agricultural service, a, 237
Colonial appointments, 133
Colour charts, 86
Colours of flowers, the, 16, 51, 349
Combretum purpureum, 421
Conference at Sutton Bonnington, 2
Conifers, notes on some recently discovered dwarf, 49
Convolvulus althaeoides and C. tenuissimus, 158; C. nitidus, 44
Cook, Mr. Henry C., 72
Cooper, Mr. C. H., 396
Cornish flower growers' visit to Lanarth, 287
Coronilla cappadocica, 461
Corylus Colurna, 308
Costantin, Hélène, and her art, 256
Cotoneaster Simmonsii as a hedge plant, 108
Cotton, a hybrid, 112
Covent Garden Market: Prince of Wales in, 235; proposed extension of, 40
Cox, Mr. E. H. M., 472
Crabs, flowering, 440; at Kew, 355
Crassula lactea, 44
Crawfurdia trinervis, 28
Crinums, garden, 222
Crocus biflorus, 77; C. chrysanthus, 228; C. iridiflorus, 116; C. Sieberi, 228; C. Tommasinianus, 360
Crops, yield of, sunshine and, 471
Cucumbers in frames, 191
Culinary Pea competition at Westminster, 154
Cuthbertson, William (*Ten Months Abroad*), 22
Cyclamen libanoticum, 283
Cyclamens, 189, 201; hardy, 97
Cynoglossum amabile, 60
Cypher, John, memorial to the late, 17, 231, 314
Cypripediums: twin-flowered, 17, 67; two new, 179
Cyprus, Botanical tour in, 356
Cytisus Ardoinii, 366; C. hirsutus, 344; C. monspessulanus, 8

D

DAFFODIL SUNDAY AT KEW, 303;
Daffodils: at Knollwood, U.S.A., 287; in New Zealand, raising, 296
Dahlia coronata, 215
Dahlias in public parks, 91
Daphne Cneorum, 277; D. Mezereum, 325
Darnaway Forest, 72
Darnell, A. W. (*Hardy and Half-Hardy Plants*), 395, 435
Darwin, Charles, Down House the home of, 437
Davidia, the largest, 366
Davidia involucrata, 182
Davidias from cuttings, 227
Davidson, Mr. Alexander C., 256
Day Lilies, yellow, in Americas 50, 65, 84
Dendrobium delicatum, 179
Devon and Exeter Horticultural Society, revival of, 92
Dianthus caesius var. grandiflorus, 441; D. squarrosus, 475; D. subacaulis, 441
Diaries for 1929, 22
Dickson and Co., of Edinburgh, Bicentenary of Messrs., 165
Dinard, horticultural exhibition at, 272
Disease, plant, the causes of, 461
Diseases of grasses, 280
Doronicum Columnae and D. Pardalianches, 401
Down House, the home of Charles Darwin, 437
Droseras, two New Zealand, 9
Dublin, window and front garden competition in, 437
Dublin Park gardeners, 416
Dunkin, Mr. H., retirement of, 321
Dutch Elm disease, the, 91, 271
Dutch nurserymen and Spain, 55
Dyer, the late Sir William T. Thiselton-, 1, 357

E

EASTER HOLIDAYS, THE, 256
Echtermeyer, Professor T., retirement of, 196
Economics of fruit-growing in England, the, 125, 146
Edinburgh, notes from, 184, 331, 473
Edinburgh Royal Botanic Garden Guild *Journal*, 304
Edmonds, Mr. J., retirement of, 132
Egham, pleasure ground for, 154
Einstein forest in Palestine, an, 236
Elaeagnus multiflorus, 460
Embothrium coccineum in Sussex, 107
Engledow, Mr. F. L., 113
Enkianthus campanulatus, 440
Eomecon chionantha, 35
Epidendrum vitellinum, 11
Epigaea repens, 360
Erica carnea var. Winter Beauty, 228; E. darleyensis flowering late, 208; E. mediterranea, 325
Erigeron leiomerus, 360, 441
Eremuri, 8
Erinacea pungens, 78
Eryngiums, 222
Erysimum linifolium, 6
Escallonia pterocladon, 103
Escallonias, 420
Essen Horticultural Exhibition, 272
Essential oils, antiseptic and cooling properties of volatile, 350
Eucalypti in California, 2
Eucalyptus, the genus, 173, 303
Eucryphia cordifolia, 209
Evans, the late Mr. Frank, memorial to, 356
Evergreen, an attractive, 100
Exacum macranthum, 6
Examinations in 1929, horticultural, 2
Exhibition experiences, some, and the late Mr. John Cypher, 231
Exochorda grandiflora, 449
Eynon, Lewis, B.Sc., F.I.C., and Lane, Henry J., B.Sc., F.I.C. (*Starch: its Chemistry, Technology and Uses*), 206

F

FÉDÉRATION HORTICOLE PROFESSIONELLE INTERNATIONALE, 21, 304
Fendlera rupicola, 420
Fertilisers from the air, 406
Fires: destructive woodland, in Scotland, 256; heath and grassland, 197; heath, near London, 236
Fisher, Dr. R. A., and Dr. A. D. Imms, honour for, 154
Fleet Street, a new garden in, 21
Florets, number of, in an exhibition Chrysanthemum, 107, 125, 145, 189
Florists' flowers, 102, 184, 228
Flower border, hardy, 8, 44, 77, 116, 136, 180, 200, 247, 276, 309, 324, 345, 401, 422, 478
Flower garden, 9, 26, 60, 76, 118, 137, 158, 200, 268, 298, 344, 401
Flower garden (Week's Work, the), 4, 24, 42, 58, 74, 94, 114, 134, 156, 176, 198, 218, 238, 258, 274, 290, 306, 322, 342, 358, 374, 398, 418, 438, 458, 474
Flowering plants of South Africa, 132, 416
Flowers, glossiness in, 314, 393
Foan, G. A., and Redgrove, H. S. (*Blonde or Brunette ?*), 447
Food materials by plants, transfer of, 173
Forest development at Thetford, 397
Forest activities, South Australian, 472
Forestry Commission in the Grampians, activities of the, 216
Forestry: grants, increase in, 57; scheme for Scotland, proposed new, 472
Forsythia intermedia var. spectabilis, 400,
Foundling Hospital site as a park, 287
Foxgloves, 26
Freesias from seeds, 96, 166, 231
French Pomological Society, 416
Fritillaria karadaghensis, 221, 341, 360, 429; F. latifolia, 228
Frost: after the—a thaw, 173; damage, prevention of, 356; effects of the severe, 190, 256, 332; heat and drought, 195; in Sussex, effects of the great, 226; victims in Belgium, aid for, 155
Frost injury: to Apple tree, 209, 231, 299; to trees, 268
Fruit blossoms, order of flowering and pollenation of, 282, 298, 313, 332, 351
Fruit garden, 17, 52, 68, 126, 190, 315, 393, 448, 479
Fruit garden, hardy (Week's Work, the) 5, 25, 43, 59, 75, 94, 114, 134, 156, 176, 198, 218, 238, 258, 274, 290, 306, 322, 342, 358, 374, 398, 418, 438, 458, 474
Fruit-growing: in England, economics of, 125, 146; Jones-Bateman Cup for research in, 455; the national importance of, 165, 190, 210, 232
Fruit Register, 211, 251
Fruit trees: early fruition of, 35; manuring of, 190; protecting, from rabbits, 52; rabbit damage to, 269; self-fertile, constant-cropping, and seedling, 31; spraying, in open blossom, 303
Fruits under glass (Week's Work, the), 4, 24, 42, 58, 74, 94, 114, 134, 156, 176, 198, 218, 238, 258, 274, 290, 306, 322, 342, 358, 374, 398, 418, 438, 458, 474
Fuel and heating, 447

G

GALANTHUS NIVALIS VAR. VIRIDAPICE, 297; G. nivalis var. virescens, 180
Garden Classic, a, 39
Garden notes from south-west Scotland, 280, 348, 376
Gardeners' Chronicle Almanac, 1929, 21; medal, 371
Gardeners' Chronicle seventy-five years ago, 3, 23, 41, 57, 73, 93, 113, 133, 155, 175, 197, 217, 237, 257, 273, 289, 305, 321, 341, 357, 373, 397, 417, 437, 457, 472
Gardeners' Chronicle of America, the, 435, 479
Gardeners, legacies to, 21, 39, 56, 73, 93, 113, 155, 174, 196, 216, 236, 271, 321, 340, 371, 396, 436, 472
Gardeners' pay: and agricultural scholarships, 314; and status, 51, 87, 125, 145, 166, 190, 231, 249, 350, 407
Gardening careers, 107
Gardening Illustrated, jubilee of, 196
Gardens: and charity, 303; Essex, open to the public, 471
Garnett, Mr. C. S., 304
Gartenschöenheit for January, 112
Gaultheria hybrids in New Zealand, 196
Gaultheria nummularioides, 8
Genista aetnensis, 159
Gentiana Andrewsii, 365; G. Kochiana var. dinarica, 475; G. verna, 326
German nursery employee's long service, 72
Germany, small holdings in, 113
Gesneras, hybrid, 361
Gladioli in New England, 195; South African, 216
Gladiolus Hey Day, 272; G. Rufus, 272
Glasgow, permanent allotments at, 154
Glasnevin, notes from, 45, 201, 441
Glossiness in flowers, 314, 393
Grape-growing industry at Hoeylaert, 373
Grasses, diseases of, 280
Great Barrier Reef, vegetation of the, 396
Green plants, the photosynthetic activities of, 71
Greenhouse: a revolving, 237; on New Year's Day, the, 26
Greenhouses, what shall we do with our ?, 189, 249, 314
Golf course, sale of a, 272
Gordonia alatamaha, 159
Gout-weed, recalcitrant, 166
Gustafson, A. F. (*Handbook of Fertilisers*), 48
Guildford, new Rose garden for, 340
Gwydir Castle, 155
Gypsophila cerastoides, 276; G. repens var. monstrosa, 402
Gyrostachys stricta, 365

H

HAAGE, SEVENTIETH BIRTHDAY OF "CACTUS," 357
Haarlem Daffodil Show, 174, 257, 305
Haemaria discolor, 292
Hair dyes and agriculture, 447
Hall, Sir A. Daniel (*Fertilisers and Manures*), 364; (*The Book of the Tulip*), 404;
Harding Cup for Paeonies, 395
Hartless, Mr. A. J., 22
Haumont, fatal accident to M. Ernest, 197
Hay fever, collecting pollen for treatment of, 91
Heath and grassland fires, 197; near London, 236;
Helianthemum umbellatum, 240
Helianthus orgyalis, 44
Helichrysum bracteatum, 44; H. Selago, 200
Hemerocallis, 122
Henna, the cultivation and uses of, 13

Heterosis, 455
Heucheras, 116
Hevea brasiliensis, the propagation of, 255
Hibbertia volubilis, 361
Hightown Common, 397
Hippeastrum advenum var. major, 27; H. pratense, 441; H. procerum, 377
Hippeastrums at Kenya, 27; out-of-doors, 232
Holboellia latifolia, 181
Holland House Gardens, 456
Holland, the bulb industry in, 356
Hooper, Mr. Cecil H., F.L.S., 216; lecture by, 132
Horticultural Club, the, 39, 174, 456
Horticultural Congress at Nice, 175
Horticultural crops, frost damage to, 256, 332
Horticultural development, Texan, 155
Horticultural Examinations, 1929, 2
Horticultural exhibition at Dinard, 272
Horticultural journal, jubilee of a, 196
Houstonias, the, 60
Hoyt, Mrs. A. Sherman, 372; honour for, 395
Hurricane damage in Germany, 2
Hyacinth bulb, surprising vitality of a, 284
Hydrocyanic acid gas, fumigation with, 131

I

"IDEAL" APPLE AND PEAR GRADER, THE, 289
Ideal Homes gardens, the, 187
Imms, Dr. A. D., honour for, 154
Imperial Chemical House, beautiful woodwork at the, 154
Incarvillea grandiflora var. brevipes, 379
Indoor plants, 6, 27, 44, 61, 76, 96, 116, 137, 180, 201, 221, 241, 260, 292, 324, 361, 400, 421, 440
International Horticultural Congress in London, 1930, 303
International Institute of Agriculture, 174, 320
Inula Roylei, 77
Iris Bruno, 415; I. ensata, 461; I. Eldorado and I. Iris King, 2; I. gracilipes, 116; I. versicolor, 475
Iris, the: as an economic plant, 465; future of, 428
Iris garden, 461, 475
Iris Society, the, 435
Iris Society's show, the, 449
Irises: collecting, 425; of the Bruno type, 427; bearded, in St. James's Park, 435; tall bearded, for the specialist, 427; two early-flowering, 427
Isopyrum thalictroides, 116
Ivy, 188; the destructive, 355, 449; the management of, 227
Ivy baskets, 268

J

JACARANDA ATROLILACINA, 347
January's weather, 72
Japan, autumn tints in, 209
Japanese gardens, 189
Jealott's Hill Research Station, 456
John Innes Horticultural Institution, 83; Centenary Conference at, 56
Jones-Bateman Cup for research in fruit-growing, 455
Journal of the Society of Foresters of Great Britain, 372
Juvenile gardeners at Guildford, 357

K

KACHE, PAUL AND SCHNEIDER, CAMILLO (*Einjahrsblumen*), 330
Kalmias, 27
Kent Playing Fields Association, 174
Kenwood, birds at, 320
Kenya Colony, 273; Hippeastrums at, 27
Kew: American lady horticulturists at, 436; appointments at, 131; a statue for, 71; Chinese Rhododendrons at, 320; distribution of seeds from, 40; flowering Crabs at, 355; flowering plants at, 173; Japanese Cherries at, 340; May-flowering Tulips at, 395; Muscari Heavenly Blue at, 373; new Curator of, 255; notes from, 141, 348, 442, 473; the Temperate House at, 112; versus Wisley, 113; work of, during 1928, 319
Kew Guild, annual meeting and dinner, 355
King, the, a national thanksgiving, 339
King's, the, birthday honours, 415
Kirstenbosch Botanic Gardens, 257
Kirton Agricultural Institute, experiments at the, 436
Kitchen garden, the (Week's Work, the), 5, 25, 43, 59, 75, 95, 115, 135, 157, 177, 199, 219, 239, 259, 275, 291, 307, 323, 343, 359, 375, 399, 419, 439, 459, 474
Kniphofias, 247

L

LAMBEAU, M. FIRMIN, 132
Lambourne, the late Lord, 111, 304
La Mortola, plants injured by cold at, 226
Lanarth, Cornish flower growers' visit to, 287
Lancetilla Experiment Station, Honduras, 462
Lane, J. Henry and Eynon, L. (*Starch: its Chemistry, Technology and Uses*), 206
Langdale Valley, 131
Lapageria rosea and its varieties, 76
Lapagerias, 145, 189, 208, 231
Larch, the, correct name of, 287
La Revue Horticole, centenary number of, 471
La Selva, Nice, 204
Late planting in the present season, 240
Lathyrus, some perennial species of, 366
Lauriston Castle, Edinburgh, 255, 456
Lavatera Olbia, 9
Lavender, investigations of the shab disease of, 296
Lawn: the alpine, 100; the Camomile or scented, 15
Law Notes:—Frauds on nursery firms, 37; Market Gardeners v. Town Council, 147
Leeds Flower Show, 435
Leek, the, 148
Leeks, white tip disease of, 106
Lemoine, M. Emile, 2
Lemons, the world supply of, 155
Leptospermum scoparium, 119
Leucothoe Davisiae, 119
Lewisia Howellii, 455
Lilies: a new disease of, 82; in 1928, 30
Lilium philippinense var. formosanum, 63, 136
Lily pests and diseases, American investigation of, 22
Lime-sulphur, Black Currant mite and, 166
Linaria origanifolia, 116; L. triornithophora, 117
Lindera Benzoin, 381
Lindley Library, additions to the, 66, 403, 430
Linnean Society: annual dinner, 320; Prince of Wales and the, 271
Linum flavum, 379; L. salsoloides var. nanum, 6
Loder, Mr. Gerald W. E., 154
Logan, 329
London Daffodil Show, 236
London Parks: memorials in, 235; unemployed miners in, 56; work for unemployed in, 2
London Royal Parks, filming the, 237
Lonicera hedges, 159, 208
Ludgvan Rectory, 183
Lupinus polyphyllus var. Moerheimii, 478
Lychnis Haageana, 117
Lychnis species, some, 9
Lysichitum camtschatcense var. album, 441

M

MAGNOLIA CONSPICUA, A FINE OLD, 429
Magnolias, 78, 125
Malcolm, Mr. Alexander, V.M.H., 112
Malling Research Station, East: Annual Report, 372; members' day at, 320
Manchester, a new open space for, 435
Manchester parks and recreation grounds, *Handbook* of, 456
Manchester Parks Department *Journal*, 357
Manures, garden: for January, 16; for February, 86; for March, 168; for April, 268; for May, 333; for June, 406
Manuring arable land, 314, 349, 369
Market Fruit Garden, 68, 147, 211, 300, 368, 447
Massachusetts Horticultural Society, medal awards of the, 3
McKelvey, Susan Delane (*The Lilac*), 281
Meconopsis, a fungus disease of, 143
Meconopsis Baileyi: at Wisley, 466; the status of, 66
Medinilla magnifica, 201
Meighn, Moira (*A Little Book of Conceited Secrets and Delights for Ladies*), 364
Memorial Medal awarded to Carnation Spectrum, 132
Merendera caucasica, 180
Mertensia moltkioides, 327
Mertensias, three good, 104
Mesembryanthemum, 34, 84
Mimulus Bartonianus, 247
Miscanthus japonicus, 344
Mistletoe, 231
Moisture conservation by mulching, 228
Moltkia petraea, 136
Monardas, 136
Moray Field Club, 304
Moreton Paddox Gardens, 321
Morgan, Mr. L. E., 288
Mote Cricket Ground, Maidstone, 271
Musa Ensete, 137
Muscari Heavenly Blue at Kew, 337
Myriophyllum proserpinacoides, 96
Myrtus nummularia, 138

N

NAPHTHALENE AS A REMEDY FOR RED SPIDER, 436
Narcissus Graellsii, 401; N. minimus, 314; N. rupicola, 349
National Institute of Agricultural Botany, the, 21
National Mark Fruit Trade Committee, appointment of members of, 287
National Sweet Pea Society, the, 457
National Trust, more land in Lake district acquired by, 235
Nature reserves, New Zealand, 2
Nemesias and Schizanthuses for hanging baskets, 44
Nertera depressa, 220
New Moon sowings, 67
New Zealand Droseras, two, 9
New Zealand: Gaultheria hybrids in, 195; nature reserves, 2; raising Daffodils in, 296
New Zealand plant hunter, notes from a, 140, 161
Nice Horticultural Exhibition, 396
Nicotianas, 298
Nissley, Charles H. (*Starting Early Vegetable and Flowering Plants Under Glass*), 348
Nomenclature of garden plants, rules and recommendations for the, 477
Northern gardeners, for (Week's Work, the), 5, 25, 43, 59, 75, 95, 115, 135, 157, 177, 197, 219, 239, 259, 275, 291, 307, 323, 343, 359, 375, 399, 419, 439, 459, 474
Nurseries, old Chelsea, 268, 334

Nursery Notes:—Barr and Sons, Messrs., 431; Dickson and Co., Messrs., 165
Nymphaeas, 365

O

Obituary: — Bannatyne, John, junr., 254; Camm, W., 193; Carles, William Richard, 338; Cobley, Richard, 270; Collins, John, 394; Cottam, Gledhill, 90; Couderc, Georges, 150; Courtney, John, 193; Curtis, William, 70; Davidson, Edward, 214; Dixon, Charles, 37; Duthie, Robert Andrew, 70; Evans, Frank, 356; Frisby, John, 171; Gabriel, Johannes, 90; Garnett, Gerald, 110; Gérome, Joseph, 90; Harding, Albert, 394; Harvey-Gibson, Robert John, 453; Hitchcock, Mrs. Arnold, 129; Horton, Ernest, 19; Hoskins, Joseph, 150; Hunter, Gilbert R., 150; Hunter, John M., 338; Inglis, Charles D., 129; Jadoul, René, 110; Jefferies, William John, 318; Jones, Thomas, 54; Kirch, Carl, 469; Laet, Francois de, 19; Lambourne, Lord, 18; May, Joseph, 302; Mosley, Seth, L., 150; Muir, James, 130; Pernet-Ducher, M., 19; Plemper van Balen, B.A., 193; Ramstetter, Mathias, 151; Randall, Samuel George, 302; Ridgway, Dr. Robert, 338; Ries, Friedrich, 302; Segar, S., 171; Silcock, H., 254; Smet, Romain de, 90; Taylor, Edmund S. (Pathfinder), 320; Thrower, Joseph, 453; Tomalin, Alfred, 254; Trabut, Dr., 413; Trevithick, W. E., 151; Veitch, Peter C. M., V.M.H., 214; Vert, James, 302; Wilson, James 110; Wittmack, Ludwig, 254

Odontoglossum citrosmum, 260
Odontioda Lambeauiana, 153
Oenotheras, 401
Oil fuel for boilers, 299
Olearia virgata, 277
Olearias, 227, 325
Olive growing in Spain, 288
Omphalodes, the, 178
Onions, 36; cold storage of, 154
Orchard cultivation, power machinery for, 256
Orchid, a subterranean, 71
Orchid houses (Week's Work, the), 4, 24, 42, 58, 74, 94, 114, 134, 156, 176, 198, 218, 238, 258, 274, 290, 306, 322, 342, 358, 374, 398, 418, 438, 458, 474
Orchid notes and gleanings, 116, 179, 260, 292
Orchids, an introduced capsid injurious to, 3
Ornithogalum lacteum, 360

Ourisia alpina, 443, 385; O. macrocarpa, 421, 443; O. macrophylla, 136
Oxalis lobata, 78; O. tetraphylla, 116

P

Paeonia Cambessedesii, 369
Paeonies, Harding Silver Cup for, 395
Papaver rupifragum var. atlanticum, 138
Paris, English Roses in, 113
Paris Spring Show, 197
Park: a new for Stanmore, Middlesex, 55; the ideal, 55
Park employees and unemployment insurance, 22
Parochetus communis, 276
Parrotia persica, 60, 144
Parsnips, 108
Passion Flower, the, 119
"Pathfinder," memorial to, 320
Pear Catillac, 17
Pears, cordon, 68, 107
Peas: for early sowing, 68; trials of early culinary, 236
Peasholm Park, Scarborough, developments in, 55
Pentstemon cristatus, 200; P. Davidsonii, 422; P. heterophyllus, 158; P. Six Hills Hybrid, 441
Peter Barr Memorial Cup, 287
Petherbridge, Mr. F. R., 416
Philesia buxifolia, 261
Phlox Douglasii, 267
Phosphatic fertilisers, 339
Photo-synthetic activities of green plants, the, 71
Phyllodoce coerulea, 181
Plant breeding problems, 111
Plant disease, the causes of, 461
Plant: export by ferry to Belgium, 320; importations into the United States, 2
Plant history in nomenclature, 14, 81, 122, 204, 225
Plant life, problems of, 279
Plant pests in East Sussex during 1928, 105
Planting, late, in the present season, 240
Plants: in flower in mid-November in Cornwall, 17; injured by cold at La Mortola, 226

Plants New or Noteworthy:— **Amaryllis Banksiana**, 12; **Astilbe koreana**, 119; **Astragalus utahensis**, 327; **Caltha palustris var. alba**, 327; **Clusia grandiflora**, 157; **Fritillaria karadaghensis**, 221; **Jacaranda atrolilacina**, 347; **Mertensia moltkioides**, 327; **Rhododendron leucaspis**, 308; **R. sp. (Forrest 21,488)**, 277; **R. telopeum**, 221; **R. Vanessa**, 464; **Trollius acaulis**, 327; **Watsonia Beatricis**, 292
Plants under glass (Week's Work, the), 4, 24, 42, 58, 74, 94, 115, 134, 157, 177, 199, 219, 239, 258, 275, 290, 306, 323, 342, 358, 375, 398, 419, 439, 458, 474
Playing fields movements, the, 255
Plumbago rosea, 221
Poisonous plants, dangers from, 67
Polyanthus: Barrowby Gem, 77; the garden, 294
Polyploidy, 2
Poppies, Sunbeam, 268
Portsmouth Horticultural Society's Summer Show, 216
Portulacas, 137
Potash industry in United States, grant for development of, 255
Potash notes, 186
Potato: crops, record, 17; drying by Sugar Beet plant, 72; future of the, 234, 314, 350; futures, 251; news, 127; pool, proposed, in Scotland, 340; sales, Scottish, 472; sales, Scottish seed, 154; seed, inspection, 145; sickness, the control of, 436; trials, Scottish, 73; wart disease immunity trials, 1929, 131
Potatos: blackleg of, 72; export of British, to Germany, 257; forcing early, 52; in Scotland, 1928, acreage of varieties of, 56; manuring of, 153; seed, 174; the grading of Scottish, 41; variety and cooking trials of, 196; wart disease of, 91; 1928 register of growers of certified stocks of, 40
Potentilla nitida, 6
Poterium obtusum, 309
Poucher, William A. (*Perfumes, Cosmetics and Soaps, with special reference to Synthetics*), 312
Power machinery for orchard cultivation, 256
Pratia angulata, 104
Primrose, an old garden, 266
Primula kewensis, 287; P. rosea, 246; P. suffrutescens, 292
Primula, the genus, 14, 34, 66, 85, 104, 124, 142, 165, 185, 207, 230, 248, 266, 281, 326, 367, 402, 428, 466
Primulas: Asiatic, 264; Chinese, 257
Prince of Wales in Covent Garden Market, 235
Problems of plant life, 279, 446
Professional gardeners, 188
Prunus pendula, 344; P. persica var. flore sanguinea pleno, 366
Public parks and gardens, 52, 251, 269, 369, 432
Publications received, 3, 57, 73, 113, 133, 155, 175, 197, 217, 237, 273, 305, 321, 341, 357, 373, 397, 417, 437
Puschkinias, 401
Putoria calabrica, 136
Pyracantha Rogersiana, 67, 107
Pyrethrum, production in England, 2

Q

Queen Marie of Roumania and her gardens, 57
Queen's Intitute of District Nursing, the, 91

R

Rabbits: breeding for fur, 249; damage to fruit trees by, 269; protecting fruit trees from, 52
Rain, the shortage of, 236
Rainfall: at the Cheshire School of Agriculture, 1928, 145; at Tirley Garth Gardens, Tarporley, 1928, 57; in Bute, abnormal, 56
Ranunculus gramineus, 158, 220
Raoulia australis, 344
Raspberries, autumn-fruiting, 52
Raspberry Hailsham, 17
Read, Miss D. H. Moutray (*The Gardeners' Year Book*), 1929, 174
Redgrove, H. S., and Foan, G. A. (*Blonde or Brunette ?*), 447
Red spider, naphthalene as a remedy for, 436
Renantheras, 292
Rewards and other things, 283
Rhododendron Association *Year Book*, 371
Rhododendron Aucklandii, 420; R. campylocarpum, 319; R. hippophaeoides, 7; R. leucaspis, 308; R. sp. (Forrest 21,488), 277; R. telopeum, 221; R. Vanessa, 464
Rhododendrons: Chinese, at Kew, 321; propagation of by cuttings, 79, 99
Rhubarb, 167
Richardson, Mr. A. D., 196
Richmond Park golf pavilion, 112
Rockwell, F. F. (*Irises*), 160
Rodents, fluctuations in the numbers of, 55
Rodgersia tabularis, 246
Romans, land surveying by the, 256
Root-flies, Carrot, Onion and Cabbage, control of, 250
Rosa gigantea: flowering out-of-doors, 449; in flower at Cambridge Botanic Garden, 288, 369
Rosarian botanist, a Swedish, 91
Rosarium, a German, 40
Rose: Belgium's favourite, 39; breeding, 160; Congress at Lyons, French, 175; garden, 240; garden, new, for Guildford, 340; new, competition at Barcelona, 175; priority right for name of new, 155; trees and the Merchandise Marks Act, 1926, 2; rust, 416; trees, marking of imported, 36, 195, 415
Roses: for trial at Wisley, 196; from the Royal Gardens, 455; in Paris, English, 113; late-flowering, 240
Rosmarinus officinalis var. prostratus, 325
Rothamsted and Woburn Experimental Stations, 373
Rotterdam Spring Show, 255
Rowallane, 355
Royal Horticultural Society: 153; accounts, 195, 249, 271, 334; April exhibitions of the, 255; Awards, list of, 55; Awards of Garden Merit, 112; Cavendish family and the, 341; (*Classified List of Daffodil Names*), 304; examinations, 430, 449; Fruit Committee, history of the, 415; Gardens Club Journal, 197; medal and cup awards, 39; new hall, award to, 319; next meeting, 131; President and Council for 1929, 111; President of the, 71
Royal Society's conversazione, 397

S

Safflower, the, 164
Saintpaulia ionantha, 421
Salix Bockii, 325; S. daphnoides, 119; S. lanata, 60, 107; S. lanata var. Stuartii, 159, 208, 231, 283, 369
Saltwood, American gardens at, 436
Salvia verbascifolia, 479
Salvias, 118
Sanguinaria canadensis, 178
Savidge, Mr. C., 435
Saxifraga, early-flowering, 242
Saxifraga Guthrieana, 220; S. Elizabethae, 276; S. Irvingii, 344; S. Petraschii, 326; S. Wallacei, 422
Scabiosa Pterocephala, 28
Schizanthuses and Nemesias for hanging baskets, 44
Schlich, memorials to the late Sir William, 396
Schneider, Camillo and Paul Kache (*Einjahrsblumen*), 330
Scientific research at Cambridge, gift for, 23
Scilla italica, 402
Scotland, garden notes from southwest, 280, 348, 376, 475
Scottish crops under glass, 372
Scottish forests, the story of the, 92
Scottish Forestry Commissioners, difficulties of, 372, 429, 466
Scottish Forestry Journal, the, 417
Sears, Fred. C. (*Fruit-growing Projects*), 63
Sedum fastigiatum, 441; S. Kirilowii var. rubrum, 379; S. Lydium, 158; S. Middendorffianum, 136; S. pilosum, 441; S. primuloides, 178; S. ternatum, 220
Seed-testing and Plant Registration Station, Scottish, 3
Seeds for distressed miners, 197
Senecio canalipes, 44; S. japonicus, 26; S. tyrolensis, 441
Seventeenth century garden, a, 364
Sewell Medal for alpine plants, 153
Shab disease of Lavender, investigations of the, 296
Shewell-Cooper, Mr. W. E., 236
Shrubs, late summer and autumn-flowering, 160
Sideritis euboea, 178
Silphium perfoliatum, 9
Slugs, the control of, 283
Small holdings in Germany, 113
Smith, W. H. and Son (*Advertisers' Handbook*), 92
Snowdrops, 314, 377

Societies:—American Iris, 23; Bakewell Flower Show, 356; Batley Paxton, 191; Birmingham and Midland Counties Gardeners', 233; British Carnation, 108, 355; British Delphinium, 108; British Florists' Federation, 109; British Mycological, 56, 192, 236, 416; Brussels Linnean, 154; Cardiff Gardeners', 148, 192, 233, 370, 482; Cheltenham Floral Fête, 480; Cornwall Spring Show, 336; Croydon Horticultural, 150; Deeside (Aberdeenshire) Field, 317; Derbyshire Horticultural, 191, 254, 451; Dublin Naturalists', 90; Elgin Horticultural, 150; Gardeners' Club, 432; Gardeners' Royal Benevolent Institution, 21, 88, 112, 303; General Bulb Growers' of Haarlem, 286, 433; Glamorgan Spring Flower and Daffodil, 353; Glasgow and West of Scotland Horticultural, 154, 171, 233, 288, 317; Guildford Chrysanthemum, 148; Guildford and District Gardeners', 54, 148, 192, 233, 304, 357, 432, 480; Hitchin Chrysanthemum, 411; Instow Spring Show, 317; Iris, 112, 339, 450; Kilmarnock Spring Show, 270; Kingston and Surbiton Chrysanthemum, 150; Lanarkshire Fruit Growers', 171; Leeds Paxton, 110; London Daffodil Show, 300; London and South of England Viola and Pansy, 150; Manchester and North of England Orchid, 18, 69, 129, 269, 338, 432; Manchester and Salford Gardeners', 253; Massachusetts Horticultural, 173; Midland Daffodil, 334; Moray and Nairn Foresters', 171, 285; National Bulb, 273; National Carnation and Picotee, 88; National Chrysanthemum, 37, 129; National Primula and Auricula, 337; National Rose, 22, 70, 315; National Tulip, 412; Nationale d'Horticulture de France, 468; Newcastle Horticultural, 148; Norfolk and Norwich Spring Flower Show, 354; North-east Coast Exhibition, 216, 341, 356; North of England Horticultural, 54; Orchid Club, 87, 301; Paisley Florists', 286; Parks and Botanic Gardens Superintendents, 55, 69, 150, 173, 370; Professional Gardeners', 18, 148, 213, 233, 336; Reading and District Gardeners', 18, 54, 90, 171, 213, 254, 302, 338; Rhododendron, 287, 337; Royal Botanical and Horticultural of Manchester and the Northern Counties, 320; Royal Caledonian Horticultural, 317, 412, 468; Royal Gardeners' Orphan Fund, 23, 72, 149, 393; Royal Horticultural, 17, 53, 69, 89, 128, 168, 212, 253, 284, 316, 339, 352, 382 (Chelsea), 408, 433, 453, 481; Royal Horticultural of Ireland, 353; Royal Scottish Arboricultural, 92; Salford Flower

Show, 356; Salisbury Gardeners', 108, 149, 270, 469; Southport Flower Show, 373; Three Counties' Agricultural, 451; United Horticultural Benefit and Provident, 90, 171, 173, 213, 302, 413, 468; Wakefield Paxton, 337; Yorkshire Flower Show and Gala, 37, 467
Society of Garden Architects, proposed, 91
Sodium chlorate as a weed-killer, 174, 298, 371
Soil Research, Scottish Institute for, 471
Soil sterilisation, 35, 67, 87, 107, 124, 145, 166, 188, 208, 334, 369
Sophora tetraptera, 29, 255
South Wales mining dumps, beautifying, 436
Spades, types of, in Germany, 305
Spartina Townsendii on Canvey Island, 236
Spiraea bullata, 308; S. discolor, 277
Spiraeas, shrubby, 400
Spraying fruit trees in open blossom, 303
Spring Flower Show at Rotterdam, 372
Stanmore, Middlesex, new park for, 55
Statice profusa, 241
Stewart, Mr. W. E., 436
Stoking, on, 188
Storing vegetables, 283
Strawberry, the Alpine, 315
Strawberry plants, inspection and certification of, 321
Strawberries, strawing, 448
Strelitzia Reginae, 208
Streptosolen Jamesoni, 400
Studley College: national appeal on behalf of, 131; show in aid of, 195, 271, 320
Sugar Beet seeds, treatment of, to prevent seedling diseases, 229
Sunshine and yield of crops, 471
Sutton and Sons, Messrs. (*Garden Calendar and Diary*), 56
Sulphur fumes and plant life, 273
Sutton Bonnington Conference, 2
Sweet Pea exhibition in Holland, 272
Sweet Peas, 26; intermediate, 228
Sweetest-scented flower, the, 369, 429, 466
Sydney Botanic Garden staff, 471
Symbiosis: between nodule organism and Leguminous plant, 371; cereal, 395
Symphyandra pendula and S. Hofmannii, 276
Symplocarpus foetidus, 344
Synnotias, 442
Synthyris reniformis, 326
Syringa villosa, 440; S. Wilsonii, 440

T

TANAKEA RADICANS, 158
Tar distillate washes, 479
Taylor, Mr. T. W., 356
Tewkesbury Daffodil Show, 256
The Bush, Antrim, 10
Thetford, forest development at, 397
Thlaspi rotundifolia, 268
Thorburn, Grant, 328
Thunbergia erecta, 361
Tiarella cordifolia, 242
Tobacco production, world, 48
Tomato grading in Scotland, 371
Tomatos: imported, 3; marking of, 153
Trachycarpus excelsa, 29
Trade notes, 70, 192, 214, 254, 354, 370, 413
Trailing plants, useful, 48
Treasure box, the, 123
Tree-felling competition, a, 396
Tree-planting: on American roadsides, 155; on Barnet by-pass road, 56
Trees, picture postcards of British, 40
Trees and shrubs, 7, 28, 60, 78, 103, 119, 138, 159, 181, 200, 227, 240, 261, 277, 308, 324, 344, 366, 381, 400, 420, 440, 460
Trees of remembrance, 256
Tricyrtis, 180
Trientalis europaea, 180
Trilliums, 260
Trollius acaulis, 327
Tukey, H. B. (*The Pear and its Culture*), 16
Tulip, the, 363
Tulip species, the breaking of, 423
Tulipa Greigii, 297; T. Sprengeri, 441
Tulipa, the genus, 173
Tulips, 404; concerning, 112; May-flowering, at Kew, 395
Turbat, M., honour for, 456

U

UMBELLULARIA CALIFORNICA, 200.
Undergraduates, vacation employment for, 479
Unemployment insurance, park employees and, 22
United States, plant importations into the, 2
Ursinia anethoides, 91
Uvularias, 297

V

VACCINIUM OVATUM, 119
Vegetable: a new, 368; cultivation, 55
Vegetable garden, 36, 52, 68, 87, 108, 148, 166, 191, 232, 284, 350, 368, 448
Vegetables: notable successes with, 166; storing, 283; under glass, 35
Vegetation of the Great Barrier Reef, 396
Venidium fastuosum, 71, 91, 133
Ventimiglia, the flower market of, 47
Veronicas, herbaceous, 324
Viburnum Carlesii, 381; V. tomentosum var. Mariesii, 461; V. t. var. plicatum, 240
Vienna University, appointment at, 72
Vineries, French, to be restored, 320
Viola Arkwright's Ruby, 117; V. canadensis, 309
Violas, 422
Vittadinia triloba, 422
Vitality of a Hyacinth bulb, surprising, 284
Vitex Agnus-castus, 103
Vries, honour for Prof. Hugo de, 305

W

WALLROCK, MR. SAMUEL, 340
Ward, Captain F. Kingdon, 235, 395, 415
Ward's, Captain F. Kingdon, tenth expedition in Asia, 21, 46, 80, 120, 138, 162, 202, 242, 278, 310, 362, 380, 405, 444, 476
Water garden, the, 98
Watsonia Ardernei, 360; W. Beatricis, 292
Weather: records in 1928, 22; in March, the, 271; the severe, 111
Weed problems in U.S.A., investigation of, 216
Welsh garden, notes from a, 64, 142, 245, 311, 376, 460
Welsh playing fields scheme, 237
Westall, W. Percival (*Nature in Field and Meadow*), 296
White fly, greenhouse, destruction of, by parasites, 417, 455
White tip disease of Leeks, 106
Wild garden, the, 26
Willmott, Miss Ellen, V.M.H., 40
Window and front garden competition in Dublin, 437
Winter greens, 87
Winter, the aftermath of, 319
Wisley: easier access to, 113; Meconopsis Baileyi at, 466; notes from, 103, 163, 246, 312; Roses for trial at, 195; trials of autumn-sown Cabbages and Onions at, 456; trials of Chrysanthemums and Gaillardias at, 174
Woodland garden, 26, 180, 241, 260, 297, 309, 360
Woolly aphis, 127, 166
Wolverhampton Floral Fête, 289
Woolman, Mr. John, 40
Work for unemployed in London Parks, 2
Worms, hair, in gardens, 464

Y

YEW LEAVES, CATTLE POISONED BY, 272
Yoshichi Asami (*The Crab Apples and Nectarines of Japan*), 364

Z

ZAUSCHNERIA CALIFORNICA VAR. MEXICANA, 422
Zutphen, horticultural show at, 40

LIST OF ILLUSTRATIONS.

A

ABBIS, MR. H. W., PORTRAIT OF, 472
Allium Beesianum, 273
Amaryllis Banksiana, 11
Amos, Mr. A. E., portrait of, 92
Anisotome (Ligusticum) latifolia, 345
Anthurium Rothschildianum var. Excelsior, 93
Apple tree, a Lane's Prince Albert, split by frost, 210
Apple tree damaged by rabbits, 269
Arbutus cutting, a rooted, 181
Argemone grandiflora, 73
Arthropodium cirrhatum, 423
Astragalus utahensis, 321
Atkinson, Mr. William, V.M.H., J.P., portrait of, 174
Azalea, a Japanese, in a Heidleberg garden, 75
Azaleas, Kurume, types of, 244, 245, 247, 249

B

BESCHORNERIA YUCCOIDES AT TORQUAY, 479
Birkenshaw, Mr. A., portrait of, 56
Burgess, Mr. A. E., portrait of, 272

C

CAPP, MR. F., PORTRAIT OF, 456
Carnation Kathleen, 95
Chelsea Show, exhibits at the, 382, 383, 385, 387, 389, 391, 401, 403, 408, 409, 411, 412
Chile and the Andes, 224, 225, 262, 295, 346
Chrysanthemum New Year, 59; C. Takamikura, 361
Chrysanthemum Show at Shanghai, 41
Chrysanthemums at Downhills Park, Tottenham, 23
Clematis Lucie Lemoine, 261
Clusia grandiflora, 155
Cook, Mr. H. H., portrait of, 5, 72
Cooper, Mr. C. H., portrait of, 396
Crawfurdia trinervis, 28
Crinum sp. from the Sudan, 223
Crocus biflorus, 77; C. iridiflorus, 113
Cupressus arizonica (glabra) var. pendula at Glasnevin, 45
Cyclamen libanoticum, 283; C. Rohlfsianum, 97, 98
Cyclamens: exhibited at Dublin, 189; house of, at Moreton Paddox, 199
Cymbidium Albania, 57; C. Letty, Wyld Court var., 175; C. Ralph Sander, Old Quarry var., 219
Cymbidiums, Messrs. Sanders' Gold Medal exhibit of, 341
Cypripedium Strombole, 61
Cypripediums, collection of rare hybrid, exhibited in Brussels by M. Firmin Lambeau, 133

D

DAPHNE CNEORUM, 277
Davidia involucrata, 182, 183
Davidia Vilmoriniana, a rooted cutting of, 227
Davidson, Mr. A. C., portrait of, 256
Dendrobium delicatum, 179
Dicksonia squarrosa and Melicytus ramiflorus, 157
Dicksonia squarrosa in New Zealand forest interior, 140
Drosera Arcturi, 9

E

EREMURUS HIMALAICUS, 8; E. robustus, 8
Erica carnea var. Winter Beauty at the Royal Mental Hospital, Cheadle, 229
Erigeron leiomerus, 441
Eucryphia cordifolia at Castlewellan, 209
Exochorda grandiflora at Kittoes, Bishop's Teignton, 449

F

FINDLAY, MR. R., PORTRAIT OF, 4
Foxgloves on the edge of woodland at Kew, 26
Fritillaria karadaghensis, 221

G

GARNET, MR. C. S., PORTRAIT OF, 304
Gentiana Kochiana var. dinarica, 475
Gilden, Mr. W., portrait of, 4
Gold-laced Polyanthus, 267; var. Mrs. John Tonge, 266
Gordonia alatamaha, 159; G. lasianthus, 141
Grammatocarpus volubilis (syn. Scyphanthus elegans), 459
Gyrostachys stricta, 365

H

HARTLESS, MR. A. J., PORTRAIT OF, 22
Heliophila linearifolia, 461
Hemerocallis Lady Fermoy Hesketh, 65; H. Margaret Perry, 51
Henna plant (Lawsonia alba), 13
Hill, Mr. John, portrait of, 5
Hippeastrum procerum, 377, 378
Hippeastrums in Kenya Colony, 25
Hooper, Mr. Cecil H., portrait of, 216
Hoyt, Mrs. A. Sherman, portrait of, 372
Hydrangeas, Gold Medal group of, exhibited by Baron Bruno Schröder, 457

I

INCARVILLEA GRANDIFLORA VAR. BREVIPES, 379
Iris cretica, 426; I. gracilipes, 115; I. Joan Curtis, 437; I. mellita (pumila), from Ahlem Dagh, 424; I. pumila, from Macedonia, 425

J

JACARANDA ATROLILACINA, 347
Jordan, Mr. F., portrait of, 4

K

KURUME AZALEAS, TYPES OF, 244, 245, 247, 249

L

LAMBEAU, M. FIRMIN, PORTRAIT OF, 132
Lambourne, the late Lord, portrait of, 18
Lancetilla Experiment Station, Honduras, plants at, 462, 463, 465
La Selva, views of, 197, 205, 207
Lavatera Olbia at Regent's Park, with Nemesias, 3
Lawsonia alba, 13
Leeks, white tip disease of, 106
Lemoine, M. Emile, portrait of, 2
Leptospermum ericoides at Rosa Creek, Dunedin, 140
Leptospermum scoparium at Avoca, Co. Wicklow, 119
Leucocoryne ixioides var. odorata, 263
Ligusticum latifolium, 345
Lilium Bolanderi in Mr. A. Grove's garden, 1914, 31; L. centifolium, scale propagation of, 31; L. philippinense var. formosanum, at Castle Kennedy, 62, 63; L. philippinense var. formosanum, single spike of, 64; L. sp. (F. K. Ward 6,134), at Bodnant, 1928, 30
Lilium, rosette disease of, 82, 83
Loder, Mr. G. W. E., portrait of, 154
Logan, views of, 327, 328, 329, 331
Lychnis Haageana, 117
Lysichitum camtschatcense var. album at Glasnevin, 439

M

MAGNOLIA CONSPICUA, AN ANCIENT, AT SOUTHALL, 429
Malcolm, Mr. Alex., V.M.H., portrait of, 112
Melicytus ramiflorus and Dicksonia squarrosa, 157
Mertensia moltkioides, 323
Miltonia T. B. Armstrong, 397
Morgan, Mr. L. E., portrait of, 288
Musa Ensete, 137

N

NARCISSUS GOLDEN INGOT, 305; N. May Molony, 373; N. rupicola, 349; N. Solleret, 307; N. Triplex, 417
Nomocharis Mairei var. leucantha and N. saluenensis at Edinburgh Botanic Garden, 473

O

ODONTIODA BLUEBELL, 289; O. Velasquez, 259
Odontoglossum mirum var. aureum, 101
Old Mill Garden, Messrs. James Carter and Co.'s, 187
Ourisia alpina, 443; O. macrocarpa, 421, 443

P

PAEONIA CAMBESSEDESII, 369
Parochetus communis, 275
Pateman, Mr. T., portrait of, 4
Petherbridge, Mr. F. R., portrait of, 416
Phlox Camla, 460
Primula Agleniana, 265; P. Forrestii, 264

R

RAOULIA BUCHANANI, 161
Rhododendron Aucklandii at Bryngarw, 419; R. Cunningham's White (rooted cuttings), 79; R. euchaites, 257; R. hippophaeoides, 7; rooted cuttings of, 79; R. intricatum, rooted cuttings of, 79; R. Nobleanum, rooted cuttings of, 99; R. occidentale hyb., rooted cuttings of, 99; R. sp. (K.W. 6,273), 135; R. telopeum, 217; R. tephropeplum, 343
Rhubarb under a greenhouse stage, 167
Richardson, Mr. A. D., portrait of, 196

S

SANGUINARIA CANADENSIS VAR. GRANDIFLORA, 177
Schizanthuses in a hanging basket, 43
Scyphanthus elegans, 459
Sedum Kirilowii var. rubrum, 375
Shewell-Cooper, Mr. W. E., portrait of, 236
Soil sterilisation, 35
Statice profusa: in a seven-inch pot, 239; three-year-old plant ringed and mossed-up for propagating, 241
Statice profusa var. superba, 399
Staward, Mr. W. G., portrait of, 5
Stewart, Mr. W. E., portrait of, 436
Sutton and Sons' Gold Medal exhibit of Tulips at Westminster, 335
Synnotia bicolor, 442; S. Metelerkampiae, 442

T

TAYLOR, MR. T. W., PORTRAIT OF, 356
Tetratheca thymifolia, 201
The Bush, Antrim: rock garden and pool at, 10
Thorburn, Grant, portrait of, 320
Trachycarpus excelsa at Tongswood, 31
Tropaeolum azureum, 359
Tulipa Greigii, 297
Tulips, Messrs. Sutton and Sons' Gold Medal exhibit of, at Westminster, 335

V

VEITCH, THE LATE PETER C. M., V.M.H., PORTRAIT OF, 214
Viburnum Burkwoodii, 291; V. tomentosum var. plicatum as a standard tree, 237
Viola canadensis, 309

W

WALLROCK, MR. SAMUEL, PORTRAIT OF, 340
Ward's, Mr. F. K., tenth expedition in Asia, views of, 46, 47, 80, 81, 120, 121, 138, 139, 162, 163, 202, 203, 242, 243, 278, 279, 310, 311, 362, 363, 380, 381, 405, 444, 445 476, 477
Watsonia Beatricis, 293
White tip disease of Leeks, 106
"Witches Broom" on Pseudotsuga Douglasii, near Chertsey, 49
Woolman, Mr. John, portrait of, 40

SUPPLEMENTARY ILLUSTRATIONS.

Agaves and Brahea Roezli at La Selva, Nice; March 16
Aloe supralaevis; February 16
Arenaria Ledebouriana; January 19
Daffodils in a woodland; April 20
Iris Bruno (coloured); June 8
Iris Eldorada and I. Iris King (coloured); January 5
Lewisia Howellii; June 22
Odontioda Lambeauiana (coloured); March 2
Rhododendron campylocarpum (coloured); May 4
Rock Gardens at Rowallane; May 18
Sophora tetraptera (coloured); April 6
Venidium fastuosum (coloured) February 2

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CONTENTS.

Alpine garden—
  Erysimum linifolium 6
  Linum salsoloides var. nanum ... 6
  Potentilla nitida ... 6
Azalea indica in Japan 6
Bulb flies 12
Camomile or scented lawn, the 15
Droseras, two New Zealand 9
Dyer, Sir Wm. T. Thiselton 1
Eucalypti in California 2
Flower garden—
  Lavatera Olbia ... 9
Garden manures for January 10
Hardy flower border—
  Eremuri 8
  Lychnis species, some 9
  Silphium perfoliatum 9
Henna, the cultivation and uses of 13
Horticultural examinations 2
Indoor plants—
  Amphicomes ... 6
  Exacum macranthum 6
Lemoine, M. Emile ... 2
Notice of book—
  The Pear and its Cultivation ... 16
Obituary—
  de Laet, F. 19
  Horton, E. 19
  Lambourne, Lord ... 18
  Pernet-Ducher, M.... 19
Orchids, a capsid injurious to 3
Plant history in nomenclature :—
  Tobacco and its derivatives... ... 14
Plants new or noteworthy—
  Amaryllis Banksiana 12
Primula, the genus ... 14
Pyrethrum production in England 2
Scottish seed-testing and plant registration 3
Societies—
  Manchester & North of England Orchid 18
  Professional Gardeners' 18
  Reading & District Gardeners' ... 18
The Bush, Antrim ... 10
Trees and shrubs—
  Cytisus monspessulanus 8
  Evergreen Barberries 7
  Gaultheria nummularioides 8
  Rhododendron hippophaeoides ... 7
United States, plant importation into the 2
Week's work, the ... 4

ILLUSTRATIONS.

Amaryllis Banksiana 11
Cook, Henry H., portrait of 5
Drosera Arcturi 9
Eremurus himalaicus; E. robustus 8
Findlay, R., portrait of 4
Gilden, W., portrait of 4
Henna Plant (Lawsonia alba), the 13
Hill, John, portrait of 5
Jordan, F., portrait of 4
Lambourne, the late Lord 18
Lavatera Olbia at Regent's Park 3
Pateman, T., portrait of 4
Rhododendron hippophaeoides... 7
Staward, W. G., portrait of 5
The Bush, Antrim 10

COLOURED SUPPLEMENT PLATE.
Irises Eldorado and Iris King.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38·4°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, January 2, 10 a.m. Bar. 30.4 Temp. 38°. Weather, Fine.

Sir William T. Thiselton-Dyer.

SIR WILLIAM T. THISELTON-DYER, who died at his home at Crickley Hill, near Witcombe, in Gloucestershire, on December 23, 1928, had been out of the public eye for years, but had kept in touch with his friends, although for some time past it was felt that the weight of his eighty-five years was telling more and more heavily on him. What influences exactly turned Dyer from the medical career for which his father—himself a well-known London practitioner of the middle of the last century—intended him, we do not know, but about a year after he had left King's College School, where he had Professor George Saintsbury as a co-pupil, and entered King's College with the intention of taking a medical degree through the metropolitan schools, the call to science—spontaneous or induced—led to his migration to Oxford, and he figures on the roll of Christ Church College for 1863. Dyer was then at the impressionable age of twenty, and among his teachers at Oxford were Rolleston and Daubeny, both of whom influenced him, the former by his sowing in Dyer's fertile mind the seeds which came to fruition in the methods of botanical teaching Dyer adopted when he, in turn, assumed the *rôle* of master, and the latter in more ways than one. Daubeny was then absorbed in the chemistry of plants and in agricultural experiments, while also intent on investigating the plants of the ancients, all of which gave a lasting trend to Dyer's botanical interests; indeed, to the end of his life the plants of the classics and their identification, whereon there is so much difference of opinion, was a subject very near Dyer's heart. He wrote many a critical disquisition on the subject, about which he knew more than most. After five years at Oxford, Dyer was called to the Chair of Natural History at the Royal Agricultural College at Cirencester, and during the two years he was there, he and Trimen published their *Flora of Middlesex*, while, jointly with Arthur H. Church, who was then Professor of Chemistry at the same College, he edited a British edition of a textbook, *How Crops Grow*, by S. W. Johnson, Professor of Agricultural Chemistry at Yale University. From Cirencester, Dyer graduated B.Sc. from London University and, while only twenty-seven, went to Dublin as Professor of Botany at the Royal College of Science. He was soon back, however, in London as Professor of Botany to the Royal Horticultural Society at South Kensington, and there he came into contact with Huxley, and renewed an earlier acquaintance with Charles Darwin, which was afterwards to ripen into a mutual regard. At that time (1872) Huxley, who soon recognised the qualities of the comparatively young occupant of the R.H.S. Chair of Botany, entrusted to Dyer the organising of the botanical part of the laboratory course of biology which he (Huxley) had just then initiated at South Kensington, and this gave to Dyer the opportunity of divorcing the education of the botanist from that of the medical student to which it had been tied of old, and placing botany on its own feet, as it were, as a natural science. This involved the introduction of laboratory work and demonstration—and all that they both mean—not in substitution of the field excursions, which, up to then, had been the only source of practical instruction in botany, but side by side with them. Dyer's work on Huxley's staff brought him into touch with the brilliant men of science of the day who formed the "South Kensington Circle" and, doubtless, influenced his appointment to the post of Assistant Director of Kew Gardens, an office of which he was the first occupant after its suppression by the Office of Works at the time when Sir Joseph Hooker was made Director. At one and the same time, that appointment brought Dyer's seven years of professorial life to an end and began his career as administrator—for the rest of his official life was spent at Kew. The second period of Dyer's active life began in 1875 with the appointment referred to above, and ended thirty years later after he had been Director of Kew for two decades. Those thirty years were pregnant of incident to Dyer in a personal sense—for two years after his appointment as Assistant Director he married his chief's daughter—and to Kew, which, when he joined the staff was the National Botanic Garden, and when he laid down the reins had become the mother garden of the Empire. Nowadays, we are apt to take it as a matter of course that there should be a botanic garden more or less in every country where the Union Jack flies, and that it should be directed by a Kew-trained man receiving all that Kew has to bestow of tradition, experience and practical knowledge, giving what it can in exchange and confiding some, at any rate, of its many troubles to its mother. That such a condition of affairs exists to-day is primarily due to Dyer. The conception of Kew as an Imperial institution was Dyer's, and he lived to see the fulfilment of his vision and its expansion by his successors. In its wider aspects, Kew of to-day, with apron strings stretching to the distant corners of the Empire, is a great monument to an able administrator, who achieved his end despite the inevitable prejudice, opposition and inertia which are apparently inseparable from public life. Although the overseas interests of Kew were an obsession with Dyer, he did not neglect the internal side of the administration. During his occupation of what he jestingly called the "papal throne" at Kew, Dyer conceived and, in 1887, began the publication of the *Kew Bulletin of Miscellaneous Information*, which was originally intended to assist colonials who were engaged in the production or exploitation of economic vegetable products. It is to Dyer, too, that we owe the *Museum Guides*, which he commenced after he had completed the reorganisation of the Museum. The Herbarium came under Dyer's reforming hand later, and he was able to add a good deal to the space available to his predecessor in office. During his directorship, the Jodrell Laboratory, which owes its existence to the munificence of the individual whose name it perpetuates, was established and equipped; the Temperate House, which had been commenced years before, was completed, and most of the glasshouses were rebuilt. Administrative duties absorbed so much of Dyer's time that, to the lasting regret of his friends, he had but little leisure for literary work. Soon after his appointment as Assistant Director, however, he began the editing of the *Flora Capensis*, which Sir William Hooker had originally suggested in 1863, and of which three volumes had been published before further progress was interrupted in 1865. The *Flora*, towards the cost of which the Governments of the Cape, Natal and the Transvaal made themselves responsible for the sum of £3,250, continued to engage Dyer's energies for some years after he had retired from Kew, and was finished in 1925. At the same time, as editor, Dyer resumed the publication, for the British Government, of the *Flora of Tropical Africa*, which also owed its inception to Sir William Hooker, and like the *Flora Capensis* had been commenced and allowed to stop. Dyer continued the editing of this until 1913, and the *Botanical Magazine* until 1907, when the tasks devolved on his successor, Sir David Prain. Apart from the above, and his incursions into the field of classical plant-lore, Dyer's literary work was mainly confined to a translation of Sachs's *Textbook of Botany* (1875), for which he and A. W. Bennett were jointly responsible. Dyer wrote with an easy, scholarly pen, and his tribute to the memory of that remarkable man, Sir Henry Collett, in the latter's *Flora Simlensis* (1902) is a happy example of his work. After Dyer had retired from official life, he represented his old University on the Gloucestershire County Education Committee, and he served on the Committee of the Bristol University. He was created C.I.E. in 1892, and K.C.M.G. in 1899. He was Vice-President of the Royal Society in 1896-97. In social life Dyer was a delightful companion; he had known the great men of science of the late Victorian era who foregathered at the Athenaeum—Owen, Charles Darwin, Huxley and the rest—and his reminiscences, especially of Darwin, were always of interest. He was never chary of counsel to those who sought it, and few young men asked his advice in vain. In his official career, Dyer was a *sahib* and something of a dictator, who, for all his autocratic ways, inspired affection, respect and loyalty in his staff. Kew and its welfare came before all else; he knew just what he wanted and generally attained it. If it was worth fighting for, he would fight for it to the end; and if, while in pursuit of his object, his feelings sometimes proved stronger than his judgment, as doubtless happened when he worked for the removal of Kew from the province of the Office of Works to that of the Board of Agriculture, as it was then, that is a very human failing.

Our Coloured Supplement Plate.—The coloured Supplement Plate presented with our first issue of 1929 depicts two very beautiful bearded Irises, *i.e.*, Eldorado and Iris King, both fine garden plants obtainable at modest prices. Eldorado belongs to the Squalens group, is about two-and-a-half feet high when flowering, and has handsome flowers which show a charming combination of gold, golden-bronze, mauve and purple. Iris King belongs to the Variegata group and is also about two-and-a-half feet tall when in bloom. The flowers are golden yellow, with bright crimson shading and veins on the broad limb of the falls. Both varieties flower in June.

Church in a Garden.—One of the most picturesque of the English churches in foreign countries is that of St. Alban, in Copenhagen, which stands in a pretty park. It is built by the side of a miniature lake, and is approached from the city by sylvan pathways. Close to it is the beautiful waterway known as the Sound, the banks of which form a charming promenade, and not far away is the beautiful sculptured mermaid on a group of rocks which is called, by English visitors, the "Peter Pan" of Copenhagen. The rural peace and tranquility of the scene are enhanced, rather than broken, by the silvery chimes of the bells which mingle with the rippling of the water.

Work for Unemployed in London Parks.—In order to relieve unemployment in special areas, the authorities have arranged three months' work for eight hundred men, at an estimated cost of £20,000, in several of the London parks. Drainage and repair work is to be done in Rotten Row, St James's Park and Kensington Gardens, and in the last-named place the grass area around the children's sand-pit is to be planted. In other Royal parks, especially at Richmond Park and Bushey Park, there is a lot of ditching, road repairing and plantation work to be done.

Polyploidy. — In commemoration of the centenary of the birth of John Innes, the Council of the Horticultural Institution is holding a Conference on "Polyploidy as a Source of Species and Horticultural Varieties." The Conference will begin at 2.30 p.m. at the John Innes Horticultural Institution, Merton, on Saturday, January 19, 1929. Tea will be provided.

Sutton Bonington Conference.—The Horticultural Organisers for the Midlands area are holding their quarterly Conference at the Midland Agricultural and Dairy College, Sutton Bonington, Loughborough, on Wednesday, January 9, at 2.30 p.m., when Mr. Montagu Allwood, of Haywards Heath, Sussex, will give an address, illustrated by lantern slides, on "Carnations." All who are interested are cordially invited to attend.

New Zealand Nature Reserves.—A policy of making State-owned nature reserves, with a view to preserving scenic features and protecting the flora and fauna, is being steadily pursued in New Zealand, so that the number of such reserves is now eight-hundred-and-six; since 1904, nearly half-a-million acres have been purchased by the State, at comparatively small expense, for these purposes. Some of the reserves are at present not easy of access, but will be better appreciated as settlement advances, while some are small and others are of no value for cultivation. A description of the recently acquired reserves is given in the *Scenery Preservation Report*, 1927-28, of the New Zealand Department of Lands and Survey, together with an account of the flora and fauna of Kapiti Island, situated at the western end of Cook Strait.

Monsieur Emile Lemoine.—M. Emile Lemoine, the famous nurseryman of Nancy, France, is the son and heir of the late M. Victor Lemoine, whose name is known throughout the world as the raiser of (among many other good things) the popular Begonia Gloire de Lorraine. M. Emile was born at Nancy on January 11, 1862, and joined his father in the nursery so soon as he had completed his scientific education under the direction of M. G. le Monnier, one of the most famous French botanists of his time. The Lemoine establishment has always been in the nature of a research laboratory, and a large proportion of its activities consist in hybridisation, in which Victor Lemoine's wife and two daughters have taken a prominent part. M. Emile Lemoine is responsible for the creation of a new race of Gladiolus, G. Lemoinei, which has added fresh lustre to the already high renown of the Nancy nursery, and in many other directions he has revolutionised previously existing standards, as in, for instance, Lilacs, Deutzias, Paeonies and Delphiniums. He was Secretary of the Société Horticole de Nancy from 1892 to 1919. In 1921, he was created Commander in the Ordre du Mérite Agricole, and in 1928 he received the signal honour of the ribbon and cross of the Légion d'Honneur. Few horticulturists have better deserved this distinction.

M. EMILE LEMOINE.

Eucalypti in California.—A key to the species of Eucalyptus grown in California, composed by Eric Walther, was published recently in the *Proceedings of the California Academy of Sciences* (4th series, Vol. XVII, No. 3; 1928). The author states that the most striking of California's cultivated trees are easily the several species of Eucalyptus—"Their towering serried ranks dominate the landscape and lend it a unique, exotic flavour totally lacking in other parts of the United States." The species most generally planted at the present day is E. Globulus, but a few years ago—during the boom—many other species were tried, but owing to lack of knowledge of the particular requirements of many of these species, few of them have proved successful. It is the view of Mr. Walther that before further attempts at growing Eucalypti or introducing them are made, statistics regarding the species to be found already in California, and their relative status, should be collected, and it was with this object that he prepared his key. He enumerates one hundred species and varieties actually in cultivation in California to-day, the majority of which are to be found in Golden Gate Park, San Francisco; on the University Campus at Berkeley; and at the former Experiment Station at Santa Monica. The key is based on the late J. H. Maiden's work (*A Critical Revision of the Genus Eucalyptus*), and attached to the key is an alphabetical list of the species dealt with; there is also a list appended of seventy-seven species which, it is stated, "have been reported at various times as grown in California, or seed has been offered."

Pyrethrum Production in England.—It would appear that the growing and harvesting of Pyrethrum for the production of Pyrethrum powder can be carried out successfully and in a practicable way in this country despite the inclemency of our climate, judging from the first part of a paper on this subject, contributed to the *Annals of Applied Biology*, Vol. XV, No. 3, by Messrs. J. C. F. Fryer, F. Tattersfield and C. T. Gimingham, who have, during recent years, fully investigated the question of whether Pyrethrum, grown under English conditions, still retains its toxicity from an insecticidal point of view. Chrysanthemum cinerariaefolium, the species from which Pyrethrum powder is obtained, was raised from Swiss and Japanese seeds, and the flowers from plants grown in six distinct localities in England were found to possess practically the same degree of toxicity. No significant effect was apparent as the result of drying the flowers by artificial means, although it was found that prolonged exposure to wet conditions led to some loss of toxicity; contrary to general opinion, the blooms remained in good condition, when stored in a reasonable manner, for long periods.

Hurricane Damage in Germany. — The hurricane which occurred in the Münster district of Germany in the second half of the month of November did considerable damage to nursery property, the total loss being estimated at 5,000 Rm., which was, however, covered by insurance. The damage consisted chiefly of broken glass, but the tremendous floods which followed the storm put several of the nurseries temporarily completely under water.

Horticultural Examinations, 1929.—Candidates for the examinations of the Royal Horticultural Society are reminded that the closing dates for entries for the 1929 examinations are as follows:—General Examination (Seniors and Juniors), January 14, 1929; Teachers' Examination (Preliminary and Advanced), January 14, 1929; National Diploma in Horticulture (Preliminary and Final), February 1, 1929; Scholarship Examination, March 30, 1929. Entry forms and full particulars may be obtained from The Secretary, Royal Horticultural Society, Vincent Square, London, S.W.1.

Rose Trees and the Merchandise Marks Act, 1926.—The Report on Rose trees made by the Standing Committee set up by the Minister of Agriculture and Fisheries, the Secretary of State for the Home Department, and the Secretary of State for Scotland, acting jointly, has now been presented. Copies of the Report are obtainable through any bookseller or directly from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C.2, and branches.

Plant Importations into the United States.—Interesting statistics with regard to the importation of plants into the United States of America during the past year, were published recently in an American contemporary. The total importations of Roses in 1928 was 10,505,436, a decline of approximately 1,500,000. More than half of these Rose plants were from Holland, *i.e.*, 5,767,680; 2,941,450 were from England, 1,655,800 from France, 115,500 from Ireland and 25,000 from Scotland. 242,046,763 bulbs were imported, an increase of more than

37,000,000 over the preceding year. Importations of bulbs from Holland totalled 198,510,756; Lily bulbs to the total of 17,700,424 were received from Japan; 23,425,008 bulbs came from Germany; 1,169,076 Lilies from Bermuda and 1,077,101 bulbs from France. Importations of plants under special permit were, with the exception of the fiscal year 1927, greater than in any year since 1920, the total number of plants imported under this arrangement being 24,643,420. The greatest single item of importation was Narcissus, of which 15,869,180 bulbs were received; bulbous Irises were next with 6,349,134, while other items were Gladioli, 1,598,697; rhizomatous Irises, 8,069; Paeonies, 24,521; Roses, 9,460; herbaceous plants, 54,177; and fruit trees and small fruits, 2,615. During the last fiscal year 30,035 shipments of plants and bulbs were inspected under the Quarantine Restriction Acts; 29,854 were permitted entry under permit, and 181 were refused. A total of 16,836 interceptions of prohibited plants and plant products, from 97 different foreign countries, was made during the year; 11,886 of these interceptions were made in baggage; 1,979 in mail; 243 in cargo; 906 in ships' stores; 1,092 in quarters; and 729 at appraisers' stores. In all these instances the material was actually seized and destroyed.

Imported Tomatos.—It is announced that an application for an Order in Council under the Merchandise Marks Act, 1926, to require the marking of imported Tomatos in their fresh or raw state with an indication of origin, has been referred for enquiry to the Standing Committee set up under the Act by the Minister of Agriculture and Fisheries, the Secretary of State for the Home Department, and the Secretary of State for Scotland, acting jointly. Attention is called to the fact that, under the provisions of the Act, while the Committee in every case referred to them must consider whether the goods should bear the indication of origin at the time of sale or exposure for sale, they may also, at their discretion, consider and report upon the question whether such goods should bear an indication of origin at the time of importation. The date of the enquiry will be announced later. Any communication with regard to the matter should, however, be addressed, as early as possible, to Mr. H. J. Johns, the Secretary of the Standing Committee, 10, Whitehall Place, London, S.W.1.

Massachusetts Society Medal Awards.—Following upon the announcement that the George Robert White Medal of Honour had been awarded by this Society to Colonel William Boyce Thompson, is the report that the Jackson Dawson Memorial Medal has been awarded to Mr. T. D. Hatfield, Superintendent of the Walter Hunnewell Estate, Wellesley, Mass., "for his skill in originating and propagating hardy wooded plants," and the Thomas Roland Medal to Mr. E. G. Hill, Richmond, Ind., "for his skill in originating and cultivating Roses."

Scottish Seed-testing and Plant Registration Station.—A report dealing with the work of this institution at East Craigs, in the vicinity of Edinburgh, was issued last week by the Board of Agriculture for Scotland. The premises, which were occupied in May, 1925, consist of three laboratories with glasshouses, and after describing in detail the equipment and apparatus, the limited usefulness of seed-testing in so far as the agriculturist is concerned, is discussed. Without deprecating the great advantage that the practice of seed-testing has been to agriculturists, seed producers and seed consumers alike, it must be stated that the adoption of the principle of seed control by the international seed trade has been, in some respects, to the detriment of advance. This is particularly so with reference to consuming areas. A control station cannot certify (at least, generally not with certainty) variety or strain, and it is fairly obvious that the value of purest seeds of the highest germinating quality is tempered by the capacity of its ultimate product for acclimatisation. In a country such as this the question of strain should certainly outweigh considerations at least of purity, having regard to the high perfection of the handling and marketing of seeds as now established. During the season 1925-26, the number of samples tested for purity and germination was 8,279, while reports issued on samples numbered in all 18,716. During 1926-27, 8,131 samples were submitted for testing. The second part of the report deals with plant registration. Experiments carried out in connection with Wart disease in Potatos, and efforts made to achieve immunity in certain varieties, are referred to at length, and it is stated that the great impetus given to the improvement of the Potato by these efforts is shown most notably in the attention paid to the maintenance of pure stocks of varieties and in the encouragement of Potato breeding. In conclusion, the report mentions that the station deals with a considerable number of miscellaneous queries pertaining to all branches of agricultural botany and entomology. For the most part these enquiries relate to the identification of varieties of the Potato and of Potato diseases, identification of plants and seeds, identification of treatment of plant diseases in general, and general advice regarding Potatos and seeds.

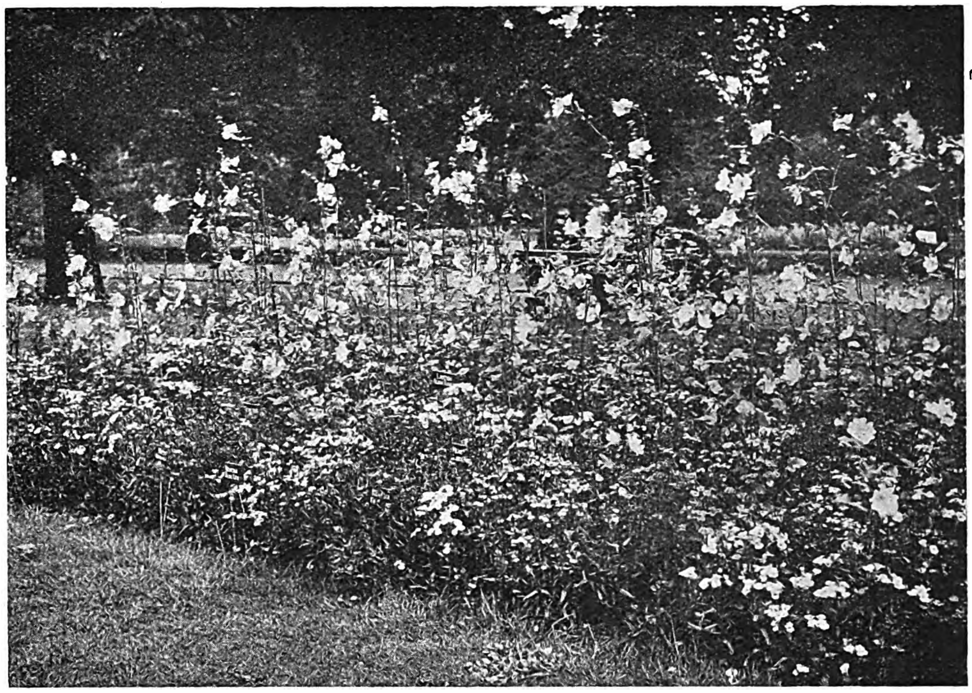


FIG. 1.—LAVATERA OLBIA AT REGENT'S PARK, WITH A GROUNDWORK OF NEMESIAS.
(see p. 9.)

An Introduced Capsid Injurious to Orchids.—Under this heading, a description is given in *The Entomologists' Monthly Magazine*, by C. C. Gimingham, B.Sc., of the capsid bug Tenthecoris bicolor, some specimens of which were found recently on a consignment of Orchids imported into this country from Brazil, and were sent to the Plant Pathological Laboratory of the Ministry of Agriculture, at Harpenden, Hertfordshire. This insect has, apparently, long been known in connection with Orchids imported into Europe; its appearance in France was reported in *The Gardeners' Chronicle* in 1908 (Vol. XLIII, Fig. 142, p. 313), while there are also records of its appearance in Germany. It has not infrequently been introduced into the United States from Brazil, Colombia and Venezuela. Mr. Gimingham suggests that it is quite a common pest of Orchids in South America, and in view of its recent appearance in this country he warns growers to look with suspicion on "any introduced insect living on a cultivated plant." He also suggests that this capsid bug may already be established in Orchid houses in this country, and he would be glad to be informed if any cases of its occurrence are noted.

Appointments for the Ensuing Week.—TUESDAY, JANUARY 8: Jersey Gardeners' Society meets. WEDNESDAY, JANUARY 9: National Carnation and Picotee Society meets; Wimbledon Gardeners' and District Mutual Improvement Society meets. FRIDAY, JANUARY 11: R.H.S. of Ireland meets. SATURDAY, JANUARY 12: Leeds Paxton Society meets.

"Gardeners' Chronicle" Seventy-five Years Ago.—*A Hard Continued Old-fashioned Frost.*—A frost that men of all ages of life declare "reminds them of their boyhood," has brought in the new year radiant with promise to the farmer of a cycle of more propitious seasons than he has of late for several years experienced. But mankind are not all farmers, nor the most inveterate farmers always on the farming topic; and viewed in other than the agricultural light, what a year has just opened upon us! Men verging on middle life are too young to realise the features that lower over the coming twelve months—and who shall say how many more?—with the prospect of another European and more than European war. It would not be easy to exaggerate the consequences that stand threateningly poised upon the moment when we have just turned from the old to the new year; a moment from which the view spreads back over nearly forty years of a Peace that had antiquated the very name of War amongst civilised countries, while before it lies an embroilment spreading like an Eastern pestilence, and enveloping nation after nation in its progress. It is impossible at a moment of suspense so circumstanced as that which this opening year brings with it not to feel a temporary lull of interest in every other less exciting topic, and to reflect with wonder on the mysterious power of evil to intercept and check the progress of good, and to compel even Peace to arm itself for Justice, to plunge into a calamitous struggle, after every unavailing effort to avert it, and to encounter a future whose probable vicissitudes baffle all foresight and conjecture. *Gard. Chron., January 7, 1854.*

Publications Received. — *The Journal of Pomology and Horticultural Science*, Vol. VII, No. 3. Headley Bros., 18, Devonshire Street, Bishopsgate, London, E.C.2; price 7s. 6d.—*Carnations for Every Garden and Greenhouse*, by Montagu C. Allwood. *Country Life*, 20, Tavistock Street, Covent Garden, W.C.; 12/6 net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE, Manchester.

Seedlings.—Where a compact house can be devoted to the growing of Orchid seedlings requiring a warm temperature, the products of several genera may be accommodated and their requirements maintained more easily; otherwise, a moist position in the warm house should be set aside for them. A mean temperature of 65° is required, and humid conditions, so that the plants may be kept growing and receive no check. All the available light should be allowed to reach them at this season, therefore the roof-glass should be cleaned each time it becomes dirty; in smoky districts this occurs frequently during the winter months. The house should be vapourised occasionally to keep thrips in check; for if these pests gain a hold on the small plants considerable damage may soon be done, and the pests are difficult to eradicate if allowed to remain long undisturbed. Such neglect necessitates the rather slow and tedious work of removing the thrips with a weak nicotine solution applied with a small brush or feather, care being taken to prevent the solution coming into contact with the compost, which it will quickly turn sour at this season. Where a number of seedlings have been raised and are being grown on, there are always some plants requiring attention. With the prospect of more daylight in the near future, the present is a good time to commence re-potting any seedlings that require it, particularly Cypripediums that are in store pots and are large enough for potting singly in two-inch pots. Those that need larger pots, or where the compost has become sour, should be potted according to the size and strength of each plant, allowing a slight increase in the size of the pot each time up to the flowering size—four inches to four-and-a-half inches. A suitable rooting medium is two parts of A.1. fibre and one part Sphagnum-moss for the smaller plants, with one part fibrous loam added for plants of the green-leaved section when large enough for placing in three-inch pots, adding crushed crocks to keep the compost porous. The tessellated-leaved section do not require any loam in the compost. Cattleyas and allied subjects should be potted on when necessary in a compost consisting of three parts Osmunda or A.1. fibre and one part Sphagnum-moss, while Dendrobium seedlings may be treated in a similar manner as growth commences, but over-potting should be avoided; quite small pots or pans will accommodate Dendrobiums up to the flowering stage, while in all cases good drainage is necessary and firm potting essential. Careful watering is necessary for some weeks, to avoid saturation, but sufficient moisture should be afforded to encourage root action, while lightly spraying the plants and their surroundings on all favourable occasions is beneficial. Water should always be afforded the plants at a slightly higher temperature than the mean temperature of the house—an important point when rain-water is stored in tanks below the ground level. Water containing much lime is not suitable for the majority of Orchids, as it quickly kills the living Sphagnum-moss, and also often causes the compost to become sour.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Perpetual-flowering Carnations.—These may be propagated successfully during several months of the year, but cuttings taken during the next few weeks will be found to root more readily than those inserted at a later date. When selecting cuttings of perpetual-flowering Carnations choose those of medium size and near the base of the the flowering stem; make the cuttings by removing each selected side-growth with a heel. Insert the cuttings firmly in sandy soil; they should soon make roots if placed in propagating frames in a temperature of 50° to 55°. Remove the frames entirely every morning for a short time, to allow the condensed moisture to escape. Some growers favour rooting the cuttings in pure sand and in a higher temperature than that recommended above, but I prefer to root them in equal parts of soil and sand. Plants propagated last month are now ready for placing singly in small pots, using a light sandy soil, which should not be made too firm at this stage. After potting, stand the young plants on a moderately moist stage, so near the roof-glass as possible; under such conditions the roots will require very little water until they become more active. The temperature at this period should be as near 55° as possible, and as much air should be admitted through the top ventilators as the outside conditions will allow.

The Seed List.—If the order for seeds has not yet been placed with the seedsman, no time should be lost in doing so. There are several useful flowering subjects that will need sowing towards the end of the present month, notably Gloxinias, Streptocarpus, Begonias and an early batch of Clerodendron fallax.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Strawberries.—The majority of growers introduce their first batch of Strawberry plants to a little gentle heat at the beginning of the New Year. A little sweet, moist heat from fermenting leaves in a pit is, perhaps, the best medium in which to start the plants, as the gentle warmth thus provided stimulates root action before top growth commences. Unless we experience a complete change in the weather, little or no artificial heat will be necessary, as 40° to 45°, with a slight rise during the day, is all that is needed for the present. A slight check by frost would do the plants good; if this occurs, the pots should be protected by being plunged to the rims in ashes. Remove the plants, so soon as they approach the flowering stage, to a shelf in the lightest part of the Strawberry house, so that fresh air may circulate freely among them. Pollenate these early flowers with a brush at midday, when the pollen is dry and a little air is being admitted.

Cucumbers.—The next two months are the most difficult in which to maintain an unbroken supply of Cucumbers. Keep the plants trained thinly, crop them only moderately, and lightly top-dress the roots with warm compost whenever they appear on the surface. Encourage growth by occasional waterings with warm, weak liquid manure, and light sprinklings of the same on the paths and borders. Sow fresh seeds in small pots, and place them in a bottom-heat of 75° to 80°, removing the seedlings, so soon as they are well through the soil, to a light position in a temperature of 68° to 70°. Cleanse the house for the reception of these plants, and prepare the materials for providing bottom heat, *i.e.*, litter and leaves, so that all may be in readiness by the time the plants are ready for planting.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Preparation.—The arrangement of the flower garden calls for considerable forethought on the part of the enthusiastic gardener. The beginning of the New Year, with its long evenings, is a suitable time to review the successes and failures of the previous season's work and to lay plans for the coming summer display. The wise man will have made numerous notes on the results of his own work, and also of the various bedding schemes that have come under his observation while visiting other gardens and public parks throughout the year. Now is the time to prepare from these notes, so far as possible, the scheme of planting for the coming season.

Flowers from Seeds.—Look through the stock of seeds in hand and put them in proper order for sowing as required; obtain, so soon as possible, those necessary to complete the season's requirements. Nothing is more annoying to the gardener than to find that the seeds are not at hand when required. Therefore be advised to order your supplies early and, as good seeds are cheapest in the end, always buy from a house of repute.

The Rock Garden.—The removal of decaying leaves should receive constant attention, as these gather in the recesses and soon spoil valuable plants. New growth is beginning to show in some sheltered corners, and it behoves the ardent alpine gardener to be on the look-out to see that nothing interferes with his treasures. At Wisley, the beautiful Primula Winteri has been in bloom since early November. Planted near the base of a rocky ledge, facing nearly due north, where it gets abundance of moisture at its roots during summer and sufficient protection by slightly projecting rocks to shed the rain off its crowns, this charming plant flowers earlier in the open than in the alpine house. Many growers fail with this subject through planting it in a position where the plant does not receive sufficient moisture at the roots during the heat of the summer. If planted beneath slightly projecting rocks, these will protect the resting buds and also the blooms from autumn and winter rains.

Heaths.—Those who only know a few of the commoner varieties of this extensive family and who, in these days of labour shortage, desire to know what to plant to give a long season of bloom with little upkeep, might profitably make greater use of Heaths on soils that are free from lime. Even on soils containing lime such varieties as Erica carnea, E. c. King George, E. c. Vivelii, E. c. Pink Beauty, E. c. Queen Mary, E. c. Prince of Wales, E. darleyensis and numerous other hybrids belonging to this group, will grow well. Many of these are in flower in the Heath garden at Wisley at the time of writing, and should continue to brighten this part of the garden for many weeks. These will be followed by groups of E. mediterranea, E. m. Brightness, E. m. alba, E. m. superba, E. arborea, E. australis and others during early spring. Heaths may be transplanted easily, and when once established the work of upkeep is almost negligible. Trimming the clumps with a pair of shears to remove the decaying flower heads and to keep the plants from becoming straggly is all that is required.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Spraying.—It is generally advocated that the winter spraying of fruit trees should be left so late as possible in the season, and where the necessary labour and machinery are available and can be employed at the precise moment, that is sound advice. There are few gardens at the moment, however, where there is a surplus of labour; while in our variable climate favourable conditions are not of daily occurrence. Indeed, during the next eight weeks, when this important work should be completed, we shall be fortunate if one ideal day a week occurs. It is essential, therefore, that all preparations be made in advance by overhauling the spraying machines and hose, so that, if spare parts or additions are required, there is a margin of time for delivery before spraying becomes urgent. It is of equal importance, too, that all spraying material is at hand the moment it is needed, and a spraying plan drawn up. The following may prove helpful in arriving at an estimate of the materials required. Trees with a spread of ten feet will require two gallons of diluted spray per tree; those with a spread of twenty feet may require five gallons of diluted spray to be effective.

Winter Washes.—If a few of the fungicides and insecticides, employed as washes on dormant trees, and their respective dilutions of water, are considered, a fair estimate of requirements may be obtained. Lime-sulphur is, at the present time, the most popular all-round fungicide for winter work. When used at winter strength, *i.e.*, five per cent., it is most efficacious against Apple and Plum blossom wilt, Apple brown rot, mildew, scab, canker (in conjunction with other measures), Plum leaf-rust, and American Gooseberry mildew. When employed against Black Currant mite, however, the strength should be a little over eight per cent. or, roughly, one part in twelve. Ammonium polysulphide is another popular fungicide, and has a great advantage in that soft soap and nicotine can be mixed with it, so serving the dual purpose of insecticide and fungicide. It is, however, best employed as a spray when the fruit trees are in leaf, and it is particularly useful for spraying Gooseberry bushes in early summer against American Gooseberry mildew, as this spray leaves no deposit on the berries. The usual strength is one per cent., with the addition of 5 lbs. of soft soap to every one hundred gallons of water, to improve its wetting and penetrating qualities. The various tar-distillates differ very little from each other. They are most effective in destroying aphis eggs, and when used at five per cent. make most economical winter washes. Lime, when used as a cover wash just before the buds burst, is considered by some to be the most efficacious egg-destroying wash we have. It must, however, be made from the very best shell lime. It should be used at the strength of 2 lbs. to the gallon, or 2 cwt. to one hundred gallons of water. It is a most powerful cleanser and does not dry out or bind the bark of fruit trees like caustic alkali. Employed at the proper time, it is one of the best preventives of Apple sucker. The shell lime should be kept perfectly dry and air-tight until required for use.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Vacant Ground.—Where ground has to be dug, manure should be wheeled on to it and the ground turned over without delay. Soil that was heavily manured last year for deep-rooting vegetables will not require any this year, smaller vegetables, such as Lettuces, stump-rooted Carrots, Turnip-rooted Beet, etc., being suitable to grow on it.

Store Potatos.—On wet days the Potato tubers in store should be sorted, removing any that are decayed, or the sound ones may soon become infected. Place plenty of straw over them to exclude frost. Early seed Potatos for forcing should be placed in boxes and brought out into the light for sprouting.

Globe Artichokes.—A mulching of leaves or manure, or ashes, should be placed around the collars of Globe Artichokes to protect them from frost. Globe Artichokes die down early in the autumn and at this time of the year are always green with leaves. When a severe frost comes along they are liable to be badly crippled; therefore a mulching often proves of assistance.

Vegetables in Frames.—Where Lettuces and Endives are growing in frames, air should be admitted freely on bright days. Keep the plants free from weeds and at intervals stir the surface of the soil. Water them sparingly, and remove any decaying leaves.

Onions.—Where specimen Onions are required seeds should be sown now in boxes, in a compost of good loam, leaf-mould and sand. Put plenty of rough material at the bottom of the boxes for drainage, and place the boxes in a warm house. Good varieties are Ailsa Craig, Cranston and Premier. The ground for these Onions should be enriched, plenty of cow manure being incorporated. Leave the surface as rough as possible so that the frost may pulverise it. Before digging, a dressing of Vaporite, distributed evenly over the ground, should be beneficial to the crop later on.

Seakale.—More crowns of Seakale should be placed in the forcing house, and root cuttings prepared for planting in spring. These should be placed in ashes, crown-end uppermost, to encourage the formation of eyes.

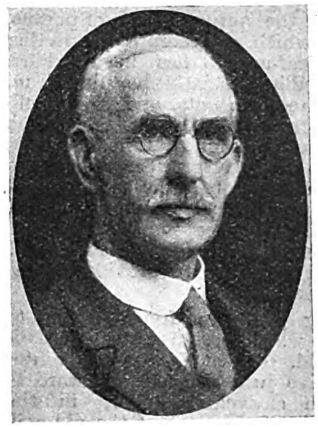
FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

Plants in Frames.—Sweet Peas, Violets, cuttings of rock plants, and all other subjects in frames, should be attended to carefully; admit air freely, remove the lights on all dry, mild days, and even during slight frost admit a little air. In severe frosty weather keep the frames closed until a natural thaw sets in. Remove any decayed leaves from the plants and, if water is required, apply it early in the day during bright weather.

Clarkia and Schizanthus.—Keep both of these subjects dwarf by pinching out the growing points regularly until the days lengthen, when more satisfactory and firmer growths will be made. Do not allow them to become potbound, but avoid large shifts at present. One of the chief causes of failure in these soft-growthed plants is drought. If once the compost becomes dry the fine feeding roots perish, and the plants are not able to absorb water when it is applied, and consequently damp off at once.

Pruning and Training Wall Trees.—This work should be pushed on with all speed. Cherries, Plums and Peaches should be dealt with on the extension system in its fullest sense. If the growths are well-ripened, they should be laid in full length up to about eighteen inches, while if the leaders have to be cut back, they should be shortened to a bud facing the wall; in every case the growths should be fastened firmly to the wall. This gives a better lead than if cut back to a bud facing outwards, as is generally done. Lay in young shoots all over the trees to take the place of old, worn-out branches. If the trees have been neglected in this respect, remove a few branches to make room for young growths to be laid in during the coming season. Apples and Pears may also be grown well on the extension system, but it is not so necessary as with stone fruits. Provided the old spurs are removed, a few each year, the trees may be kept in healthy condition. When this work is finished spray the trees with a winter wash.



Carnations.—If the required number of cuttings of perpetual-flowering Carnations has not been inserted, no time should be lost in getting them in. A bed of sharp sand, in a box or case over the hot-water pipes, is ideal for them. Make the sand firm and insert the cuttings just deep enough to hold them erect. Side-shoots half-way up the flowering stems are best; they should be pulled off with a heel and the tail removed with a sharp knife. Water them in and cover them with glass for the first week or so, turning the glass each morning, after which they may gradually be inured to full exposure.

Asparagus.—The difficulty attached to growing this vegetable lies in establishing the plants after transplanting, but it is quite easy to avoid this by sowing the seeds in the permanent beds. In the meantime, the ground should be prepared. If it is of a clayey nature, sand, burnt soil and any other opening material should be added, and the ground trenched at least two feet deep, breaking up the subsoil as the work proceeds, and adding plenty of good manure or sea-weed to it. Horse manure is best for this type of soil. Leave the surface as rough as possible until sowing time, which will be in March or April. On light soils, deep trenching may be resorted to, adding liberal dressings of cow manure.

INDOOR PLANTS.

AMPHICOMES.

I HAVE searched in vain through a great many seed and plant catalogues, but nowhere can I find a reference to the most beautiful of the two species of this genus. I refer to Amphicome Emodi, with its remarkably handsome, trumpet-shaped flowers, which have large rose-colooured corollas, and bright orange-tinted throats. A large number of these showy flowers are produced on each plant, and as they are carried in an upright position the plants, when in flower, bear some resemblance to the Gloxinia. The only other species, A. arguta, is of a more graceful habit, the smaller, reddish-pink flowers being produced on slender branches. However, they are both worth growing, and nurserymen would be well advised to include the names of these plants in their catalogues, because, being natives of the Himalayas, they are almost hardy, and only require the protection of a slightly heated greenhouse to bring them safely through the winter.

The seeds are rather curious in structure, having a tuft of hairs at each end, and it is from this unusual feature that the generic name has been derived; *amphi*, meaning both sides, and *koma*, a head of hairs.

These half-hardy perennial herbs belong to the Bignoniaceae, and are closely allied to the Incarvilleas, which A. Emodi closely resembles.

These plants may be raised from seeds, which should be sown in the spring, in pots of porous, sandy loam, to which a generous proportion of finely-sifted leaf-mould has been added. The resulting seedlings should be potted up separately into three-inch pots, and when well-rooted in these, transferred to five-inch, which size will be large enough for A. Emodi, but A. arguta, being a stronger grower, requires a further shift to enable it to grow to its fullest extent. The compost for potting should consist of equal parts of loam, leaf-mould and well-decayed manure, and during the summer months a cold frame will be found to provide all the protection that they require.

Their flowering period is from August to September, after which period water must be gradually withheld, so that during the winter they should receive just sufficient moisture to keep them from shrivelling. Early in the spring they may be shaken out of the old soil, repotted, and restarted into growth to provide flowers for another season. *G. F. Gardiner, University Gardens, Bristol.*

EXACUM MACRANTHUM.

THE note upon Exacum affine, on page 408, Vol. LXXXIV, of *The Gardeners' Chronicle*, by Mr. L. G. Atkins, contains all the necessary details requisite to cultivate this E. macranthum successfully, and, if adhered to, no difficulty need be experienced, and the results will prove all that is claimed for this charming plant.

Exacum macranthum is quite distinct from E. affine, and surpasses it in every way in point of beauty. It has large, bright violet-blue flowers, nearly two inches in diameter, with conspicuous yellow stamens, produced in corymbose heads upon the terminal and axillary branchlets; it is a most attractive plant, and the flowers are borne no less freely than with E. affine, upon specimens eighteen inches to two feet in height. E. macranthum seems to be a rare plant in gardens at the present time, a condition attributable, doubtless, to the fact that it does not respond so readily to culture, and with the same freedom, as do many favourite indoor plants; perhaps the error of depending wholly upon late winter and early spring sowing of seeds, with the resultant failure of germination, is partly responsible for this plant remaining uncommon.

While perusing a seed catalogue of a well-known firm, I noticed seeds of Exacum macranthum listed therein, but I would advise sowing the extremely minute seeds of E. macranthum in early August with a view to obtaining strong, well-established young plants to winter near the roof glass, in a warm house with a temperature under normal conditions, not falling lower than 60°.

The compost should consist of equal parts fibrous loam and peat, with a liberal admixture of coarse sand and small granulated charcoal. Single plants may be potted finally into fifty-four or forty-eight-sized pots, or three plants may be accommodated in thirty-two- or twenty-four-sized receptacles. I do not usually advocate growing several plants in one pot, but Exacums lend themselves to such practice without detracting from their appearance.

During the period of growth the plants should be accommodated in a warm greenhouse, removing them to the flowering house when they commence to bloom. *Frederick Gooch.*

AZALEA INDICA IN JAPAN.

ALTHOUGH one of the early introduced species, and familiar in Europe, Azalea indica has little to connect it with India, except its misgiven name. The wild plants are occasionally found growing on the cliffs near a stream, but Azaleas are planted freely in Japanese gardens, where they form roundish bushes and produce an abundance of blossom in early June. This lustrous, small-leaved evergreen shrub is also much appreciated as a pot plant.

There are many garden forms. Among the recent introductions, the following are worth mention: Rinpo, brick-red, with white throat, many-petalled; Koraku, fine purplish-pink, one of the best; Hao, white, spotted with purple; Ranpo, purple with white throat—one of the parents is Koraku; and Shirosumi, greenish-white, very narrow petals.

An Azalea (now Rhododendron) indica specimen with which I am familiar is some twelve years old from the cutting. It is sixty-eight centimetres in width and forty-six centimetres in height. The owner paid 2s. 10d. for it last autumn, but the ordinary price for this size is about 5s. Plants twenty centimetres in height and one hundred centimetres in circumference are 2½d. each for the average kind, and the trade price is much lower than that. This will give some idea of the price of this Azalea in Japan.

Early in June this year, I went to collect a Gentiana in a village about twelve miles from my home, where a farmer buttonholed me, and asked me to see his fine Azalea indica. It was fine, although the flowers were over; the plant was five feet in height, and covered nearly four square yards. "Some days ago," the farmer said, "it was smothered with fine, brick-red flowers from the bottom to the top." When I was measuring the specimen, he added "If you like the plant, I will sell it for six shillings!"

Japanese nurserymen used to propagate Azaleas by cuttings, in the field, and four-year-old plants are good enough to sell in the market. *K. Yashiroda, Japan.*

ALPINE GARDEN.

ERYSIMUM LINIFOLIUM.

CRUCIFERS of the Wallflower persuasion are apt to be precocious in flowering, but few of them bloom so persistently here as this Spanish and Portuguese species. In spite of some sharp frosts, many plants of E. linifolium were carrying quite a number of blossoms during the Christmas season, and I much doubt whether there is any single week of the year in which it is not showing some colour. This, however, is not a hardy species. It was practically all killed here during the winter of 1927-28, only a few seedlings in very sheltered crevices surviving. Even so, E. linifolium is one of those generally useful plants which must always be replaced. Not only is it compact in habit and adaptable for all sorts of situations, from a dry wall or fissure in the rock garden to the front of the border, but its lavender-purple flowers are a delightful shade. They are blue enough to blend most happily with the yellows of spring and purple enough to be in sympathy with the more sombre tones of later days.

Although E. linifolium is so generally useful, it is seldom so charming as when on a wall or against the face of a rock. In such a position, the soil being of the poorest description, it does not get much above six inches or so in height, and grows hard and wiry, pressing its branches flat against the stones. It is, of course, an ardent sun-lover, and perennial. But if it is not long-lived it usually provides plenty of self-sown seedlings. The leaves of E. linifolium are narrow and pointed, widely-toothed, undulated at the margins and of a dull bluish-green. It would appear, however, that there are several forms of this plant in cultivation other than the dense little alpine form, E. l. filifolium, which I have heard of and have never been able to secure. In this regard, I may say that several new plants of E. linifolium, which flowered last year, have leaves which are broader and thinner in texture, as well as a fresher, more grassy-green, than those of my original stock. The lush leafage of these newcomers does not suggest that saxatile nature which is so obvious in the, to me, better-known plant.

LINUM SALSOLOIDES VAR. NANUM.

A GOOD form of Linum salsoloides, with large flowers and a moderate stature of about eight inches, is a very lovely plant, and one that asks but the meanest of sun-beaten soils. But L. s. nanum, which is a development of this species, with a perfectly prostrate habit, is even more attractive. This charming subject makes an exceedingly close, ground-hugging mat of wiry branches, which are densely clothed with an exceedingly fine, almost fur-like foliage in a cool, glaucous-green. In summer, this emerald carpet is studded with pearl-white flowers, flushed with purple at the base of the corolla. They are almost stemless, and so beautiful is the texture of these shell-like vases that at first sight they may suggest the lovely blooms of Oxalis enneaphylla on a reduced scale. L. s. nanum would be worth a place for its foliage alone.

I find it hardy and permanent on a gently-sloping ledge of really poor, stony soil, and since it is a haunter of some of the hottest places of the southern Alps, it should be given all possible sun, and in some districts would be the better for a pane of glass tilted over it during winter. It strikes readily from cuttings, short growths about an inch long being inserted in very sandy soil and plaœed in a cold frame in August. This is essentially a plant for a close-up position in the rock garden, and an ideal subject for stone sinks or pig-troughs.

POTENTILLA NITIDA.

THE rock-gardener who can grow Potentilla nitida really well might claim to have attained an enviable measure of success. For if not tender, or even difficult, this species, when in our gardens, seldom impresses one with that robust loveliness with which it adorns its native Alps. Moreover, achieving such an object with P. nitida is equivalent to having succeeded with one of the most beautiful of European, perhaps of all, rock plants. The native home of this Potentilla is upon the higher altitudes of the limestone formations of the Tyrol and northern Italy, where it grows, for the most part, in rubble or débris drifts. It is a plant with a woody base and a prostrate, creeping habit, rarely attaining above two inches in height. The rather narrow leaflets of the Clover-like leaves are a grey-green on the upper surfaces, with a silvery reverse. In fact, the whole mat has a silvery effect, especially in winter and spring. The flowers, which usually appear in June (nearly two months earlier than in the Alps) are about the size of a florin and of an exquisite shell-pink, suggesting little Dog Roses, with a darker centre. Surpassingly lovely as they are in themselves, these blossoms are rendered the more enthralling by their setting, P. nitida having discovered the subtle charm of a blend of satin-rose and silvery-grey.

Although P. nitida is hardy, and not even very resentful towards our winter rains, it does not always flower so freely in our gardens as one would wish, and therein lies the primary difficulty in its cultivation. For some years I have had it in a dry moraine, and this seems to suit it, since it blooms with a greater heartiness than ever it did under other conditions. Lime in some form is probably essential, but thorough drainage and—failing moraine treatment—a root-run in a compost mainly composed of rubble and grit, are essentials. Full sun it must also have and a piece of glass to throw off the worst of the wet does not come amiss.

There are several colour forms of P. nitida. These include varieties with flowers of various shades, darker and lighter than the type, and there is a good white. But I do not think any of them are so delightful as the fresh, clear pink of the typical species. Propagation may be carried out by striking cuttings in pots of very sandy soil in a cold frame during the later summer. *North Wales.*

TREES AND SHRUBS.

RHODODENDRON HIPPOPHAEOIDES.

Among the many species belonging to the Lapponicum series of Rhododendrons introduced during recent years, none is more suitable for garden culture than R. hippophaeoides (Fig. 2), which, despite its rather cumbersome name, is free-growing, free-flowering and of good constitution.

It was first discovered by Captain F. Kingdon Ward in the spring of 1913, in north-west Yunnan, China, but it was through Mr. George Forrest that this beautiful Rhododendron found its way into our gardens, as later on in the same year he collected seeds of it. It is found at an altitude of 11,000 feet, growing in association with ten or more other members of the Lapponicum series, and as it is fairly widely distributed, the conditions under which it grows naturally are varied—it is found in open Pine forest, marshy meadows, boggy, peaty meadows and open, moist, stony pastures, while Handel-Mazzetti, one of the leading authorities on the Chinese flora, describes it as growing in what he terms "leaf-mould meadows," a peculiar formation consisting of deep soil, of dry, open texture, composed almost solely of decayed rhizomes and leaf-sheaths.

The flowers of R. hippophaeoides vary considerably in colour, the dominant shade being rich lavender-blue, but there are forms ranging in colour from blue and purple, through intermediate shades to rich rose or pale shell-pink.

This species has responded remarkably well to cultivation in this country. It forms a shapely bush, at present up to about three feet, but it will apparently go to four feet, and seems to delight in peaty soil of rather a sandy nature, either in open woodland, in the Heath garden, or on the rock garden—a really charming effect may be produced by planting two or three specimens against a grey boulder on the rock garden, such a background forming a very effective foil to the flowers.

It is evergreen, the glabrous, oblong or elliptic-oblong leaves, obtuse or rounded at the tips, being dark green on the upper surface and covered with yellowish scales beneath. The flowers are produced in closely-packed, terminal umbels of up to eight blooms, often so freely that the bush is transformed into a mound of colour.

Naturally, this Rhododendron is still comparatively rare in this country, but it is propagated easily by both seeds and cuttings and should soon be grown much more extensively. *F.*

EVERGREEN BARBERRIES.

For quite a considerable time, I have taken more than ordinary interest in these Barberries, and *M. W.'s* article (p. 367, Vol. XXXIV) came at an opportune time. Most of those mentioned I was well acquainted with, but there are several others of interest which may not come up to the standard of those he referred to, but which may be planted to augment a collection.

Most of these belong to the Wallichiana group, which is now highly developed, and at one time or another there has been much confusion in it, the chief characters being evergreen, flowers solitary or in fascicles, and black fruits. It is much to be regretted that the type, B. Wallichiana, appears not to be in cultivation. I often wish I could see this species growing, so as to compare it with existing species allied to it, and to prove whether it is hardy or not, or note what physical differences distinguish it from its close relatives. I always imagine B. Julianae to be nearest to it. I presume that B. Hookeri is the best-known of the Himalayan Barberries, but there is considerable difference between it and its variety viridis, the latter being quite green on both sides of the leaves, whereas those of B. Hookeri are decidedly glaucous on the under-surface. Both produce plenty of berries, are compact in growth, and attain three or four feet in height. B. Hookeri var. latifolia, on the other hand, which might be termed an enlarged B. H. var. viridis, never seems to fruit freely, although I do not know why this is so.

B. Julianae is a Chinese species which is even stronger than the last-named, from which it differs by having larger, dark green, glossy leaves and narrow, pruinose fruits, not stout as in the previous species. So far it has proved quite hardy, except when in flower, the blossoms being produced in early spring and therefore often caught by late frosts; it has more fruits this winter than hitherto seen. B. candidula, which is now fairly well-known, has a neat habit and keeps within bounds, being two to three feet high, with dark green foliage, glaucous beneath; I have never seen it really floriferous or in fruit, not even in adult bushes; nevertheless, it is a most useful evergreen.

I can endorse almost all that has been written concerning B. replicata. It is a most distinct species, each year the previous season's shoots being almost completely clad with flowers, which do not, however, always escape damage by frosts. Even now the winter buds are disclosing the inflorescence where bushes are somewhat sheltered. Last flowering season this bloomed particularly well at a period free from frosts, and I notice there are still a few small black fruits on the lowermost shoots.

Another Berberis that claims a position in any collection is B. Bergmanniae var. acanthophylla. The type does not seem to be in cultivation, and this variety has a more spinous leaf. It favours B. pruinosa in habit, but when the two are growing close to each other, the latter's foliage is seen to be paler green, and the fruits are more pruinose, and little, if any, remains of the style, whereas it is a prominent character of many of the class. Other evergreen Barberries of distinction are B. Soulieana, and B. atrocarpa, the specific difference between the two being rather remote, but easily defined on acquaintance. At present both are from six to seven feet in height.

B. Soulieana is more erect and stiffer in habit, the leaves being long and narrow, while it produces clusters of small, roundish, black fruits, which are almost white with "bloom." B. atrocarpa is more loose in habit, the foliage is smoother, and it is easily distinguished from B. Soulieana in that the fruits are fusiform in shape and smaller; they are black in colour, with little or no "bloom." Both these species have formidable spines and flower at the same time. I may merely mention that Berberis Veitchii, which at one time was named B. acuminata, is of interest because the colour of the flowers is of a different shade of yellow to all the others, with, perhaps, the exception of B. Thunbergii.

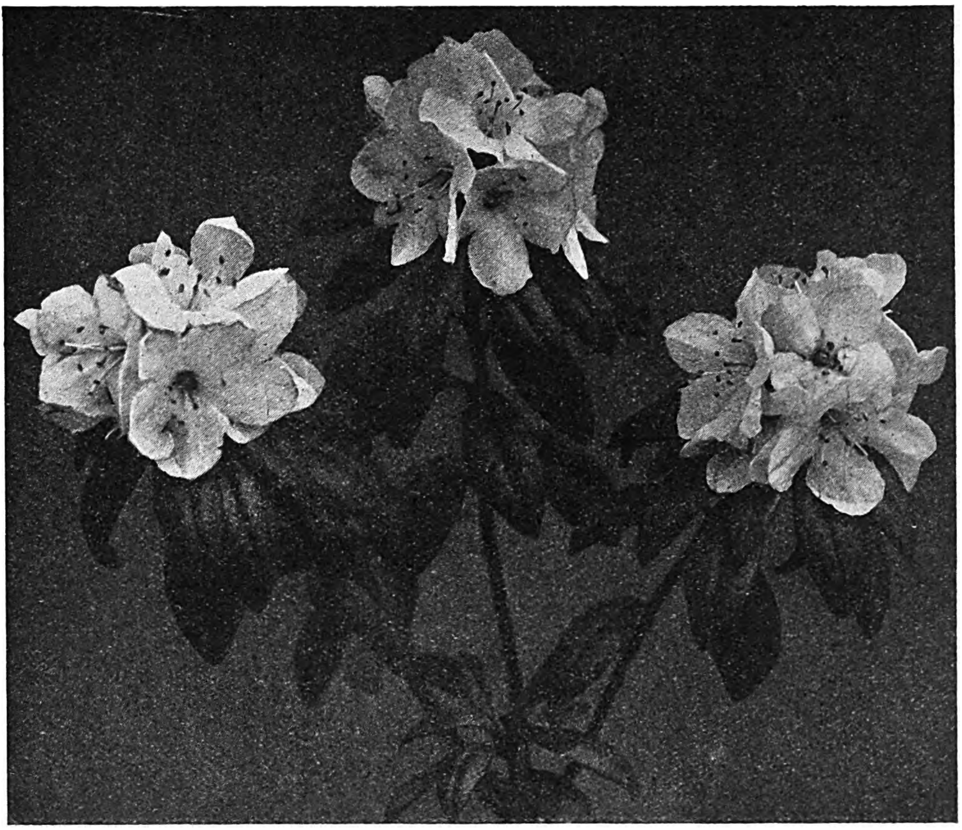


FIG. 2.—RHODODENDRON HIPPOPHAEOIDES.

Berberis sanguinea is an evergreen and of Chinese origin; its height appears to be limited to about four feet, while in habit it is dense and twiggy, the growth being short and angled, with closely placed nodes and bristling with very sharp spines of a light green colour. The leaves are distinct in character, being borne in clusters of three to six, the largest being two-and-a-half inches long, but the greater number are about one inch in length and less than a quarter-of-an-inch broad, very narrowly lanceolate in shape, wavy, and entirely margined with bristle-like spines. It flowers only moderately freely in early spring; even now the flower buds are peering through their winter coverings. They are pale yellow, with a tinge of red in the sepals and a deeper tinge to the pedicels. The fruits are purplish-black, with slight "bloom," and oval in shape, although only a few have been produced so far. The small leaves and numerous three-forked spines are a ready means of indentifying this species.

B. empetrifolia, a species from Chile, is best known in gardens as one of the parents of the well-known Berberis stenophylla. Judging it as cultivated, it is of prostrate habit, eighteen inches to two feet high, with thin growths and small, narrow leaves. It does not flower very freely and I have never seen any fruits on it; perhaps young plants grown in a warm border would do better. It would be useful in the rock garden.

I have never seen a batch of seedlings raised from B. stenophylla seeds, but have read at times how they vary, as is evident in the several forms, such as B. stenophylla var. coccinea, etc.; last September I was impressed with B. stenophylla var. autumnalis, which was in full flower at that time. Although most of the varieties take after B. stenophylla, except in height, I have never seen any comparable with B. empetrifolia.

An account of evergreen Barberries is not complete without reference to another species from Chile, namely, B. hakeoides, which at one time was B. congestiflora var. hakeoides. It is an old species, yet not so often seen as it should be. Certainly the habit of growth is lank, but it produces shoots that in time are so thickly set with flowers that there seems no chance of growth from such congestion. The round, strong, thick leaves are surrounded by sharp, evenly-placed spines. It never fails to flower well, and in spring is most conspicuous, as the young shoots made the previous season, some two feet or more in length, are literally covered with orange-yellow flowers, which are bolder at the base of the shoot and gradually diminish as they ascend to the apex. Nurserymen find it difficult to propagate, and resort to grafting it on to B. vulgaris; as proof of this I have found suckers at the base of plants.

These Barberries have, on the whole, good root-systems, and young plants transplant well if care be taken to retain a certain amount of soil. With older plants it is imperative to lift them with a good ball of soil, as they are impatient of transplanting. *C. F. C.*

CYTISUS MONSPESSULANUS.

THE Montpelier Broom, as this species is called, is a shrub of six feet to eight feet in height, with a somewhat upright, stately habit, the ends of the branches often drooping when in flower and fruit. The trifoliate leaves are a rich green and borne in great abundance. Indeed, this is one of the leafiest of the Brooms, and the foliage is evergreen even throughout hard winters. The flowers appear in May and June, and they are borne with the utmost liberality in short, axillary racemes. They are a bright yellow, about half-an-inch long and slightly fragrant. Seeds are ripened in plenty and these afford a ready means of increase by open-ground sowings in summer, but in many gardens self-sown seedlings are quite numerous enough for all requirements.

This handsome and useful Broom is a native of almost the whole of the south European coast, from Portugal to the east, and it occurs also in northern Africa and parts of western Asia. It has been cultivated for nearly two centuries, but has never been common in gardens, possibly on account of a reputation for tenderness. Regarding this, however, I must say that it has never suffered the least injury from frost here. Last winter old shrubs and seedlings were fully exposed to 24° of frost on more than one occasion and only the very young plants were slightly affected. Since this experience is quite at variance with that of Kew, where this species, according to Mr. Bean (*Trees and Shrubs Hardy in the British Isles*) succumbs to 15° to 20° of frost, it appears probable that there are strains of this shrub in cultivation which are hardier than others, and that I have got one of these. Such a suggestion does not seem improbable when one realises the vast extent of this Broom's natural range. I will add, however, that my plants are mostly growing in a meagre, rocky soil, which is undoubtedly a help. But would such conditions be sufficient to account for the fact that while G. monspessulanus does not lose a leaf through 24° of frost here, it is killed outright by a frost of less severity at Kew?

I have alluded to the above at some length because, from my own twenty years' experience of it, I feel that this is a shrub which might well be given a much wider trial. In this garden it is quite naturalised, and there are few Brooms which retain their shapeliness and vigour so long as this one, and its foliage is delightful in winter. This Broom, moreover, is one of the few which will grow from the base with vigour should it ever be necessary to cut it back.

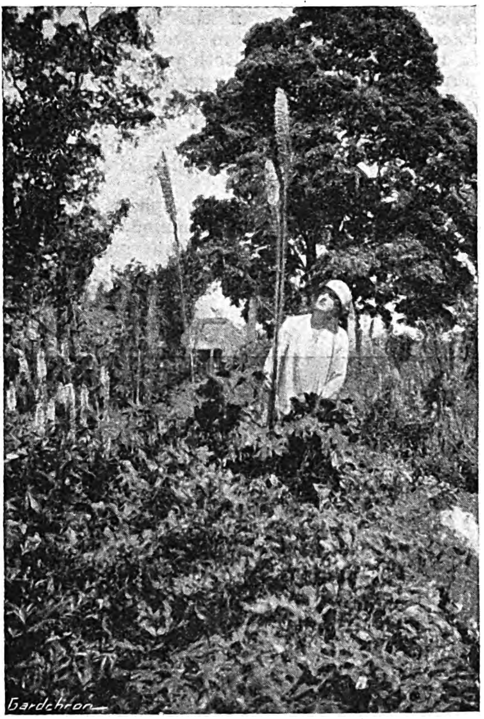


FIG. 3.—EREMURUS ROBUSTUS.

C. monspessulanus bears so close a general resemblance to C. racemosus (syn. C. fragrans) that it might well serve as an outdoor substitute for that old greenhouse favourite in any locality where the winters are not too severe, but it would be interesting to hear the experience of others regarding the hardiness of the Montpelier Broom.

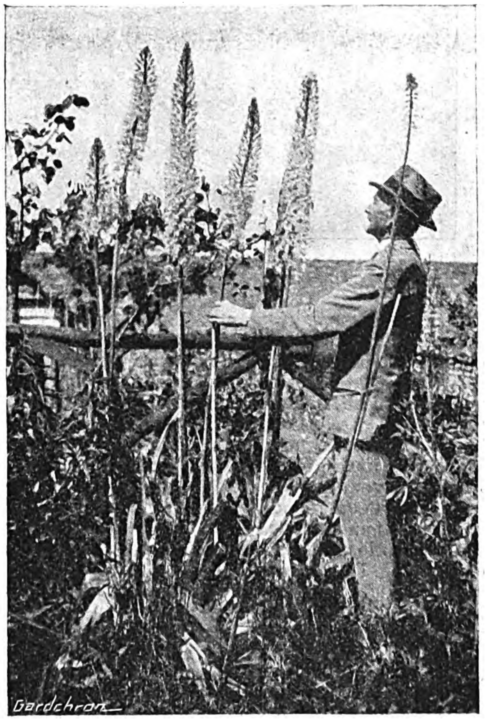


FIG. 4.—EREMURUS HIMALAICUS.

GAULTHERIA NUMMULARIOIDES.

THIS Gaultheria is always attractive in the woodland at any season, but it is especially charming in winter, when its rich green associates very happily with evergreen, hardy Ferns. It is grown here on a shady bank of light soil which is retained by stones being inset. Like so many of its race, it likes to thrust its underground shoots beneath the stones, and between the latter it makes tufts of drooping foliage which drape the entire bank with a thatch of delightful verdure. The stems of G. nummularioides are usually unbranched, and from six inches to nine inches long. They are closely furnished with a double row of alternate, rounded, heart-shaped leaves. These are nearly three-quarters-of-an-inch wide at the base of the stem, but they decrease in size towards the tips, thus giving the elegantly tapered effect familiar in the Moneywort (Lysimachia Nummularia). The growths are covered with bristles of a tawny-brown, and the pale green underparts of the leaves, as well as the margins of the latter, have these same stiff brown hairs.

The dark, green, upper surfaces of the leaves are slightly-wrinkled and convex. Although G. nummularioides flowers freely, fruits are never set here, and it would be interesting to know whether it fruits in other parts of the country and, if so, under what conditions. The small, bell-shaped corollas are not much more than one-eighth-of-an-inch across. They are greenish-white, tinted with pink, and appear singly at the leaf axils in August, hanging underneath the stems. Instead of these blooms being shed when spent, they turn a rusty-brown and remain on the growths all the winter.

G. nummularioides is a native of the Himalayas, and although long known to cultivation it has never been common in gardens. I have found it quite hardy, being uninjured by over 20° of frost, but it dislikes cutting winds and draughty corners such as it may get in the open rock garden. It may be increased by cuttings or detaching rooted pieces from established clumps. But as the plant resents such disturbance as the latter involves, none who value a well-grown patch will risk meddling with it in that manner. There is a dwarf form of the plant known as G. n. minor. I have not had it sufficiently long to be able to make any statement as to its ultimate size when fully grown, but it does not look like attaining half the dimensions of the type in stem or leaf. At first glance it might be taken for rather a pale green Spleenwort Fern (Asplenium Trichomanes) and should do well associated with the latter on shady, woodland banks. *A. T. J.*

HARDY FLOWER BORDER.

EREMURI.

IN your issue of December 22, 1928, appeared an article on Eremuri, over the signature *F. S. Banfield*. In course of his remarks, Mr. Banfield states that Eremuri are hardy only in the sheltered gardens of the south and south-west of England. In my garden here, which, I may say, is in an exposed position on high ground overlooking the city, I have grown both E. himalaicus and E. robustus for the past five years, with no special treatment, other than a covering of leaf-mould during winter, as I find their long, prong-like roots run very close to the surface. I enclose photographs (Figs. 3 and 4) showing Eremurus himalaicus in full flower, about seven feet high, and E. robustus, rather past its best, ten feet high. There are no plants in my garden which ask for or receive less attention, and yet they grow and throw up additional spikes yearly. I may also mention that with the scant protection they receive they have come safely through a winter even with the thermometer at zero. When up Deeside last summer, I saw a fine clump of Eremuri in a garden there, although it is one of the coldest districts in Scotland. While writing on this subject, I would like to add that Cortaderia conspicua forms great plants here, and withstands the hardest winters, although in the majority of nursery catalogues it is termed half-hardy. Juniperus bermudiana also stood out in the open all the winter of 1927-8, but it remains to be seen if it will continue to withstand the severe conditions. *A. W. Brown, Letham House, Perth.*

SILPHIUM PERFOLIATUM.

The Silphiums are tall plants only suitable for the wild garden or large border, as a rule; but that under notice, S. perfoliatum, the Cup Plant, looks very well indeed at the back of the border. It is not the Silphium referred to by Longfellow as the "Compass Plant," but is a much finer subject for the garden than the poet's plant. It derives its specific and popular names from the arrangement of the foliage, which is perfoliate, the leaves forming a receptacle which holds water for some time. S. perfoliatum grows from four to eight feet high, and to ensure that the plants reach the latter height, when they are more decorative, a deeply-dug, rich, and well-manured loam, not too dry, should be provided for them. When well-grown, S. perfoliatum is quite a handsome subject with its yellowish leaves, eight to twelve inches long, and flowers about two inches across. Although a good soil is to be recommended, this Silphium will grow and flower in even poor clay soils. It may be raised from seeds or increased by division in spring.

S. perfoliatum was introduced from North America, and was figured in the *Botanical Magazine*, t. 3354. *S. A.*

SOME LYCHNIS SPECIES.

The most valuable species of the genus Lychnis are natives of Europe and Asia, a few less important hailing from America. All succeed in ordinary garden soil, whether perennial or annual, and are increased by seeds or division of the root-stock. These two operations may be carried out in early autumn or in spring. A few of those better known to me include:—Lychnis Lagascae, a charming, compact subject for a warm ledge of the rock garden or a dry wall. The bright rose-coloured flowers are freely borne when a plant becomes nicely established. It may be raised from seeds and is not more than three inches to four inches high.

Lychnis chalcedonica is a well-known occupant of our hardy flower borders, growing usually three feet or more tall. There are single and double forms in both scarlet and white; there are also some intermediate shades, but these are not of great value. With this species increase is also by division and seeds, while any special shade or form is best kept true by means of cuttings.

Lychnis Haageana is an excellent plant for the front of the flower border, its height being about one foot. The flowers are nearly two inches across and include scarlet, orange, white and other shades. Of hybrid origin, it is easily raised from seeds, while the stronger roots may be divided. On well-drained land the plant is a good perennial, but on wet land it has a tendency to die off. Lychnis Haageana var. Arkwrightii was raised by Mr. John Arkwright, of Kinsham Court, Radnorshire. The flowers of this are very large and superior. It is a hybrid between L. chalcedonica and L. Haageana.

Lychnis Viscaria, and also its double form, I used to grow as a rock plant. The foliage is dark green, while the foot-high flower stalk is capped with rose-coloured flowers. The habit of this plant is tufted, and there are several varieties.

Those of us who have engaged in rambles for wild flowers will remember L. Flos-cuculi as Ragged Robin. The flowers have deeply-cut petals, are rosy-coloured, and the plant is about two feet high. It is a native plant of Britain and is well adapted for moist places in the semi-shade of the woodland garden. L. Coronaria is better known to some as Rose Campion, being remembered by its woolly leaves. It is perennial, but often succumbs on wet land when one least expects this to happen—the whole plant rotting off at the ground-level. Happily, this Campion seeds freely and will re-sow itself if a plant is left for the purpose, a light and dry soil favouring the safety of the seedlings.

L. fulgens, as the name indicates, has flowers of very bright colour, while the petals are four-cleft and much resemble those of Ragged Robin in appearance. Being but a foot or so high, L. fulgens is eminently fitted for grouping at the front of any herbaceous border. L. alpina, like Lychnis Lagascae, is best grown in a warm corner of the rock garden. The colour of the flowers of these two kinds is very similar—rose-coloured. It is also of tufted habit, throwing up four-inch flower stems.

As all the foregoing Campions are easy of management they should commend themselves to planters of herbaceous borders and rock gardens during the coming spring. For all of these the soil should be on the light side, and if moderately enriched will give superior results. Excepting the rock garden species, the Campions here noted will do well in semi-shaded places, but preference should be given to sunny sites if the soil is cold and heavy. *C. Turner.*

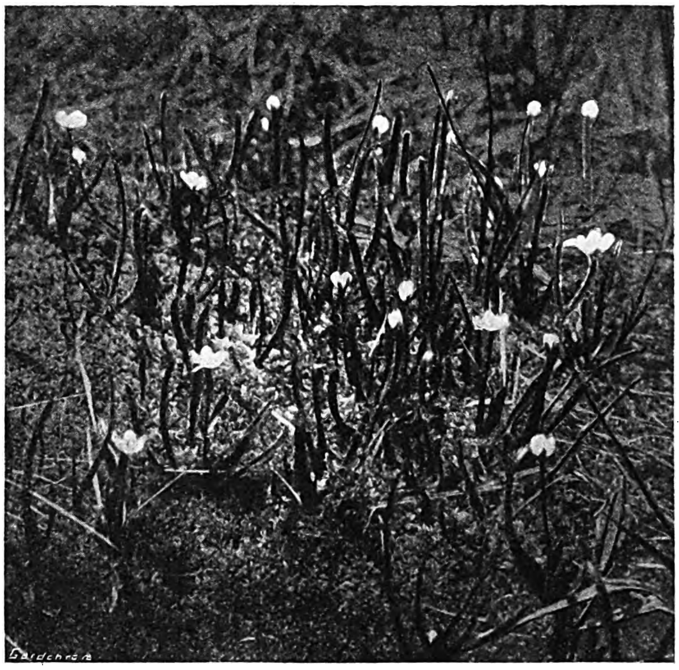


FIG. 5.—DROSERA ARCTURI.

TWO NEW ZEALAND DROSERAS.

Droseraceae is a small group of Saxifrageous herbs kept in a separate order because of their peculiar and similar habit. The whole of the species capture insects, usually by viscid and irritable, glandular hairs. The Sundews are chiefly inhabitants of peat and Sphagnum bogs, and are found in most parts of the world. Six species are found in New Zealand, only one of which is endemic.

In many high mountain areas water is constantly welling out of the soil in varying abundance, keeping the soil icy cold and tending to cause the formation of a continuous covering of Sphagnum-moss, which is saturated with water, except after a period of drought, when the surface will be dry. Droseras are frequent colonists in such areas.

D. Arcturi, Hook. (Fig. 5), is one of the commonest species found in New Zealand, where it grows in Sphagnum bogs anywhere between 2,000 feet and 5,000 feet. It is a small, erect herb with ligulate radicallea, ves from two inches to four inches long. The upper portion is covered with glandular hairs, the lower half is glabrous, while the petiole is almost as broad as the blade. The slender flower stalk, which may reach a height of six inches, rarely bears more than one white flower. The flowers open only during bright sunshine, when they are about one-third-of-an-inch in diameter.

D. binata (Lab.) is the most conspicuous New Zealand species. It is a fairly common plant on wet heaths from sea-level to 2,500 feet. The short root-stock bears many fleshy rootlets. The leaves are all radical, from four inches to eight inches in length, the upper portion being divided—and sometimes sub-divided—into two equal linear lobes which are clothed, on the upper surface and the margins, with glandular hairs. The flower-stem, which bears a loose panicle of fairly large, white flowers, grows to a minimum height of eighteen inches.

The other New Zealand species are quite inconspicuous and are scarcely worth growing, except in a botanical collection.

If cultivated under glass the Sundews require to be grown in peat and living Sphagnum-moss. The pots must be kept in saucers full of water in a cool greenhouse, but most of the New Zealand species should succeed in the bog garden in the milder parts of Britain. In such a garden these delicate herbaceous plants may be made quite a striking feature; their thick clothing of glandular hairs have the appearance of being drenched with dew drops and are a charming sight when seen sparkling in the sunlight. *A. W. Anderson, Botanic Garden, Dunedin.*

FLOWER GARDEN.

LAVATERA OLBIA.

Many references have been made in *The Gardeners' Chronicle* to Lavatera Olbia, a species which was once regarded as a difficult subject to manage. In later years, however, it has gained steadily in popularity, and at certain exhibitions large groups of it are seen occasionally. Now it has become a useful plant for summer displays, and large groups of its elegant stems and dainty flowers are seen occasionally in such magnificent displays as those in the long border at Hampton Court, while in Regent's Park it has been pressed into service as a summer bedding plant (Fig. 1) with Nemesias as a groundwork. This combination was a very charming one, distinct and suggestive to those who have to provide new and interesting floral effects in the garden during the summer season.

Lavatera Olbia reaches a height of five feet when in flower and well grown. This native of southern Europe is also a useful pot plant for conservatory decoration, where its clear, shining, rose-pink flowers are always admired. *C.*

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THE BUSH, ANTRIM.

GOING up to the house, compressed between bushes of hybrid Rhododendrons bulging with bloom, the visitor catches a glimpse of the glory of Mr. H. D. M. Barton's garden on his right; for through the screen of fine specimen trees, including Lawson's Cypress, Douglas Fir, Abies grandis, Picea pungens glauca, Cupressus macrocarpa, and other American Conifers, the eye is caught by the tossed flowers of Oriental Poppies, rocking like pillar boxes adrift on a sage-green sea, which breaks into a lather where waves of the neat Helichrysum bellidioides (a settler from New Zealand) drape over a ledge. This is the first sight of the famous rock garden. However, let us work up gradually to this climax of the gardener's skill.

At the white iron gate which opens off the sunk road, little used by traffic even in these days, are the clumps of brightly-coloured Rhododendrons referred to above, set off by an occasional frowning Irish Yew, and a voluminous specimen of Cryptomeria japonica elegans, all bronze-tipped as though caught and held in a noose of sunset.

The pebbled drive, ascending, sweeps round the lawn, which, like the rock garden on the other side, is screened by trees and shrubs. Particularly attractive in summer are Rosa Moyesii, R. Hugonis and the sweetly-scented R. carolina var. Nuttalliana; and in autumn, a group of small Acers, of the palmatum type, which flame into orange and scarlet. There is a fine clump of Arundinaria anceps, with culms fifteen feet high, arching gracefully over; the gold-tipped Athrotaxis laxifolia; Cornus Kousa, whose white flowers blush with confusion as they die; a big tree of Prunus cerasifera var. Pissardii; Stranvaesia undulata; Eucryphia pinnatifolia; Kalmia angustifolia; and scattered Azaleas, Funkias, Paeonies and occasional Magnolias, and hybrid Rhododendrons.

Then the drive takes a twist, and we emerge suddenly into the open again, and from the front of the house look over the lawn, across the sunk road in one sweep to the tree-girt countryside, with the blue Loch Neagh lying serene in its emerald bowl, and the bluer mountains of Tyrone beyond that; and at the edge of the lawn is a magnificent purple Beech forming a billowy pyramid, the lowest branches of which sweep the ground.

Turning to the grey stone house itself, the wall is dabbled with the little, pouting, ruby mouths of Tropaeolum speciosum (which grows like a weed so long as its roots do not get dried), and in the corner, a silver bush of Anthyllis Barba-Jovis. The south front of the house faces the walled garden, where beds of Roses and Violas and Begonias in a small lawn suggest a return to the severest formality. But the impression is fleeting, for the walled garden, whose paths are spanned by arches of Golden Hop and rambler Roses, is alight with Oriental Poppies, Sweet Peas, Larkspurs, Snapdragons, Monkshoods, Paeonies and Foxgloves, with the tall, crowded spires of Lupins, and the seething orange of Mulleins sticking up here and there out of the mixture.

On the south wall of the house are many interesting shrubs, such as the carmine Sutherlandia frutescens (it recalls Clianthus puniceus), a rare plant in Britain, almost unheard of in the open; a fine specimen of the quaint Abutilon megapotamicum; Eccremocarpus scaber, from Peru, covered with little, hanging, red urns, and reaching to the roof; the Potato-flowered Solanum crispum; a fine bush of Ceanothus thyrsiflorus; Wistaria, and large-flowered hybrid Clematises, including the dainty, virginal-white Bride. Mr. Barton has made several efforts to cross the red and yellow Abutilon megapotamicum with the white form of A. vitifolium, which grows here in the open; but, so far, the plants raised have not revealed any megapotamicum blood.

A small bush of Fabiana imbricata grows sturdily against the wall, and a clump of Dutch Irises, tinted in delicate water-colours, completes a June picture. There is much more in the walled garden of course—beds of seedling Primulas and household vegetables and fruit trees, for instance, and many more flowers; but it is time to pass out through the wooden door in the corner, and go down the path towards the rock garden, by the wall where the herbaceous border is, along the pleached alley. Here the scented, yellow Martagon, Lilium pyrenaicum grows in sheaves, with the royal-purple Orchis foliosa, blue Delphiniums, man high, Polemonium coeruleum, and a rampagious growth of Geranium armenum; the grey wall itself is mottled with clumps of lurid Aubrietia, Campanula and an occasional spouting fountain of Saxifraga longifolia. The pleached alley is roofed with Golden Hop, rambler Roses, Clematises, Honeysuckles and Berberis Darwinii, and is flanked on the other side by bushy trees of Abutilon vitifolium, with delicious lilac flowers, and the neglected but charming Viburnum Opulus.

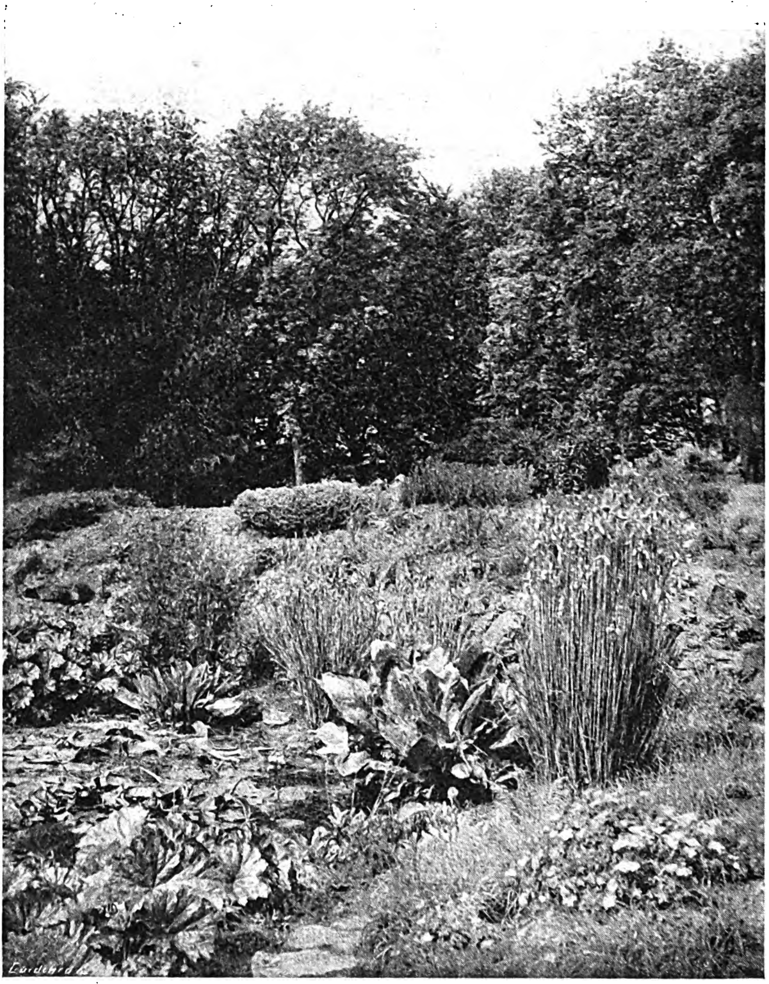

FIG. 6.—THE BUSH, ANTRIM: ROCK GARDEN AND POOL.

But enough of lesser things. The visitor has now reached the upper end of the rock garden, and henceforth will have no eyes for anything else. A bird's eye view shows an undulating rocky country, drained by a central valley, through which a stream winds its way from an upland marsh, to a small lake shut in the hills. Just beyond the lake, however, the spurs flatten out to the plains, and the stream, checked in its stride, forms a bog, backed by woods. The whole is brimful of flowers, their colours waxing and changing as the sun rises over the marshland, hangs for a space over the mountain tops, and drops swiftly behind the woods on the edge of the plain. Such, in miniature, is the rock garden.

If we stand on one of the high ridges which rise above the lake, we shall be able to look down on to the fluffy purple and white clouds of Thalictrum aquilegifolium, and the creamy mists of Polygonum alpinum, and see in the distance the plain all starred and sheeted with Primulas of many colours; or looking in the other direction, across hill and dale, see the fierce, fiery globe of some Oriental Poppy, rising like a warning sun over the jagged ridge, behind the blue seas of Anchusa myosotidiflora.

Tucked away among the cliffs and rocks are little jewelled alpine valleys and sun-baked escarpments, where clumps of the Chilean Torch Lily, Hippeastrum pratense (also known as Habranthus pratensis) glow red-hot among cool, white and yellow Iceland Poppies. This gorgeous plant is not nearly so common as it might be, although it thrives here in a climate which is cold, wet and windy. With it are clumps of the saffron-yellow, Iris-like Moraea spathacea, its long, grassy foliage sweeping the rocks. Among the rocks also, warmed by the stores of heat they lock up when the sun shines, are the New Zealand Celmisia Monroi, Geranium argenteum in silver and pink, Tulipa persica, Ramondia pyrenaica, tufts of the rare Parsley Fern and of the handsome Royal Fern, Primula Winteri, Trollius patulus, covered with large, bright golden saucers, and Anemone obtusiloba patula, an octopus-like plant whose questing arms end abruptly in blue flowers.

Narrow paths lead over hill and dale, threading their way among the vegetation, under cliffs, down valleys, or by the stream side; but so cunningly are they devised that they become lost among the flowers only a few steps ahead, and have to be sought with care. In places, one would never suspect a path at all, but seeing outspread carpets of Veronica filiformis, or Mimulus radicans, or Linaria aequitriloba, would be tempted to recline, and revel in the beauty of the scene.

And just as the paths melt into the mountains, so also do the shrubs vanish in the ocean of colour. Indeed, so perfectly proportioned is the garden, that at first sight shrubs appear to be entirely lacking, which is as it should be. Nevertheless, shrubs in some variety are shrunk into their appropriate niches, subordinated to the bold bluffs which overshadow them, the only exception being a magnificent specimen of Rosa Moyesii. Rhododendrons are scarcely grown here, only R. racemosum and R. ferrugineum being seen; but numerous Daisy bushes, such as Olearia Haastii and O. myrsinoides, throw up fountains of flowers, and hovering on the outer fringes of the highlands, in a far corner, are Magnolia stellata and Rubus deliciosus. Flowerful Brooms add a wealth of gold and silver. Genista tinctoria, clumps of Heather, Corokia Cotoneaster and Potentilla fruticosa crouch in their lairs, while vast, devouring cushions of Cytisus procumbens burst all bounds and tumble over the ledges, and C. purpureus spurts from between two rocks.

Herbaceous plants grow to a great size, notable being Euphorbia palustris and the red-leafed E. sikkimensis, Polygonum palmatum, and Gunnera. In the background are clumps of Bamboos, such as Arundinaria nitida and A. japonica.

The central lake (Fig. 6) is filled with water plants and around its rocky shore Iris sibirica sends up a fascis of thin wands, among which hover the blue, lace-winged, butterfly flowers. In the water grows the Skunk Cabbage, Lysichitum camtschatcense, and the spatheless Aroid, Orontium aquaticum, and the big leaves of Saxifraga peltata are reflected in it.

Groups of Irises of the sibirica type, of various degrees of affinity, prohibited and otherwise, crop up here and there amid jewelled crusts of pink, white and crimson Dianthus, whose parentage can be traced back to matrimony, holy and unholy, between D. neglectus, D. deltoides, and D. Griesbachii; or rather, cannot be traced back, so ravelled are the beautiful offspring. There are Gentians—G. tibetica, G. Freyniana and others, Campanulas, Saxifrages in assorted sizes, and the blue gem, Hyacinthus amethystinus; not far from the last, the shining gold and sea-green of Ranunculus graminifolius grows by the path-side, where golden torrents of Tropaeolum polyphyllum pour down from the crest of the ridge.

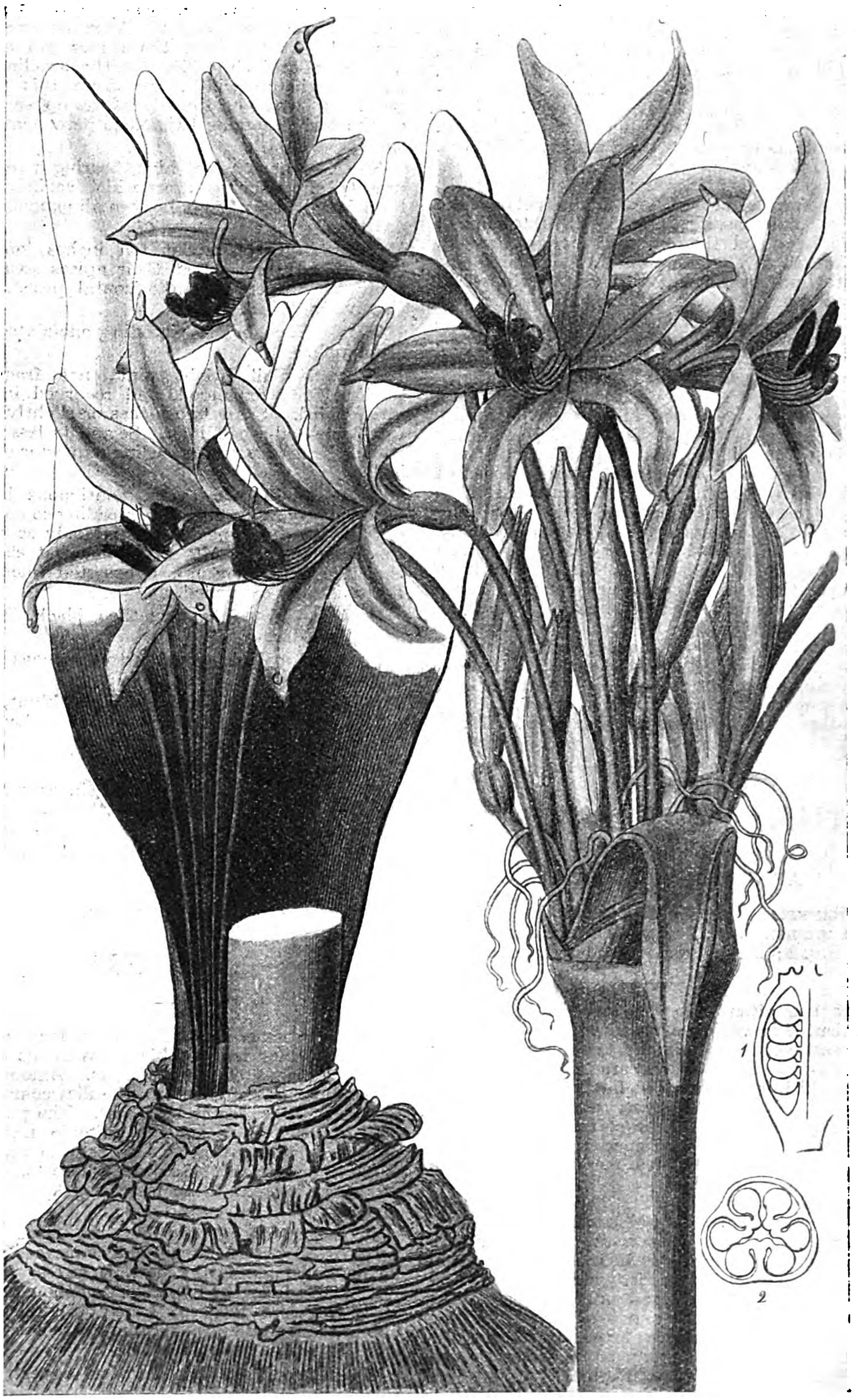

FIG. 7.—AMARYLLIS BANKSIANA.

1, Vertical section of one cell of the ovary; 2, transverse section of whole ovary. (see p. 12.)

(Reproduced from *Edwards's Botanical Register*, t. 11, 1842.)

Along the sides of the stream grow leopard-spotted Mimulus, and the twisted threads of amber, crimson and golden Primulas are drawn right through the warp of the hills. But mention of Primulas, which are the specia glory and pride of The Bush, recalls us to the upland marshes at the top end, where we shall see them in bulk. Here they are drawn up in regiments, as for a tourney, the sharp yellow platoons of P. helodoxa manning the trenches, the purple splendour of P. Beesiana and P. pulverulenta down in the marsh; the violet and white mops of P. cashmeriana, and the gorgeous flames of the new Bush hybrids, Lady Moore, Sir Frederick Moore and Lady Clanwilliam. The echo of glorious conflict here is indescribable; the colours clash and chime in the wildest harmony, and then into the fray sweep the fresh divisions from Tibet, and stalwarts from China, P. microdonta alpicola in all its colour range, P. sikkimensis, P. secundiflora, the gloomy P. prionotes, P. Wardii (Barton's variety), P. firmipes, P. reticulata, P. serratifolia, the snow-white P. chionantha, the bicoloured P. serratifolia, now rarely seen, and the gorgeous, ruby-flowered P. Waltoni. These are but a few of them, growing, not singly, but in drifts, with 'Sibirica' Irises, and nodding clusters of the dainty violet Aquilegia alpina, a neglected plant worthy of more notice, and the red Chilean Thistle.

Throughout the hill country we follow the trail of the Primulas, over a hundred kinds being grown here, although we can only mention a few of those which occur most lavishly. And as we approach the foot of the hills at the lower end of the garden, both along the stream bank and on the sagging slopes we find more Primulas, and varieties of Primulas, and hybrids of Primulas. A clump of the giant P. Florindae of Tibet has invaded the bog, and threatens to suck it dry. The scorching orange of P. Cockburniana, ignited by the molten spikes of P. Littoniana, explodes, and sets the vivid P. Poissonii smouldering balefully in the background! P. lichiangensis also grows here, and the ramping P. denticulata, long since over, and P. Bulleyana, and P. Smithiana.

There are also numerous species of Meconopsis, little clumps of blue M. Prattii, and fields of the yellow lampshade Poppy, M. integrifolia; while here and there a tall, moon-yellow M. paniculata or blue-flowered M. Wallichii shoots up to burst rocket-like and emit a shower of coloured stars. Besides the new Primulas raised at The Bush, there is the striking Mimulus bartoniensis, and several good hybrid Brooms have originated here. But one cannot name more than a selection of the fine plants which, during twenty years of selection and endeavour, have become established in the rock garden.

Finally, gardening at The Bush is a family affair. After dinner, like Aquarius, you seize the watering-pot—when the pressing needs of honey-bees swarming in some otherwise harmless Apple tree do not claim prior notice—and offer libations to Primulas. The very dogs—and they are legion—are allowed, nay, rather encouraged, to assist in a friendly spirit of co-operation; and if occasionally they do uproot a favourite Torch Lily in mistake for a weed, or tunnel beneath the very best Meconopsis in pursuit of a mythical mouse, well, poor little chaps, they enjoy it just the same. They love to scramble over the rocks and to fish in the pool, and puppy dogs and Primulas are all happy together in this garden of Eden. *F. K. W.*

PLANTS NEW OR NOTEWORTHY.

AMARYLLIS (?) BANKSIANA.

A. Banksiana of *Bot. Reg.*, 1842, Pl. XI; A. grandiflora var. Banksiana of Herbert, Pl. 32, Fig. 2; Brunsvigia Slateriana of Baker.

It has often fallen to my lot to unearth ancient Amaryllids of beauty and of historic interest which are unknown to most present-day gardeners. This time I am able to describe one which is on record as having flowered only once in English gardens, at Newick Park, Uckfield, about 1840, and so must be unknown to every English gardener now living. An opportunity has enabled me to examine the living flowers and leaf.

Amaryllis Banksiana (Fig. 7), belongs to a small group of Cape Colony bulbs which are so little known that one cannot even be dogmatic as to genus, especially as their fruits are not on record. Those authorities who have classed the plant here described under Amaryllis or under Brunsvigia have not exhausted all the possibilities of generic nomenclature, for the ovules and the synchrony of inflorescence and foliage is characteristic of Nerine.

The fine coloured figure in *Bot. Reg.* was taken on the first expansion of the earliest flowers, and so does not give the recurved poise that the flowers assume a few days later. Nor does it give the peculiar spiral twist that the upper part of the leaves assume when growth is mature. Herbert's figure is from a dried specimen, and the leaf does not belong to this particular bulb, as he himself warns us may be the case.

This is a bulb of beauty and individuality which will certainly appeal to many amateur growers, especially as it should be fairly hardy.

Description.

Bulb.—Deciduous, ovoid, about three inches in diameter, situated below the surface of the ground.

Leaves.—Appearing with the flower-scape in late autumn. Probably about six, erect, one-and-a-half to one-and-three-quarters-of-an-inch maximum width by one foot long, glabrous on the face, with many well-marked, parallel longitudinal veins, with a semi-transparent white, narrow, entire edge. Apex narrow and rounded. At the base the leaves are three-quarters-of-an-inch wide, shortly swelling to their maximum width, and from this point becoming flexed on the edges, the upper third of the leaf becoming twisted in two complete spirals.

Scape.—About a foot high, bearing a regular umbel of about thirty flowers, which last in beauty for a fortnight, and may be seen all expanded at one time.

Pedicels.—Erect, about ten inches long or less, abruptly curved at their apices so as to bring the flowers to a horizontal pose. Distinctly six-ribbed.

Tube.—None, or not exceeding one-sixteenth-of-an-inch.

Flowers.—Full bright pink, not fragrant, regular, fully expanded, and recurved in the upper third. Span two inches or slightly less. Limb one-and-a-half inch. Segments less than half-an-inch wide but exceeding a quarter-of-an-inch.

Stamens.—In two ranks, contiguous below but abruptly ascending and spreading somewhat above. At their apices they suddenly contract to a fine thread. Although somewhat shorter than the limb, they appear exserted when the flower is fully expanded.

Anthers.—Not fully versatile; black. Pollen grey to ochreous-white.

Style.—Equal in length to stamens and aligned with them.

Stigma.—Appearing as a simple, blunt, but not capitate, end of the style. The development of the stigma is delayed.

Ovaries.—Oval, green.

Ovules.—Two to four in a bunch, or grouped about the middle region of the placenta. Nearly sessile.

Fruit and Seeds.—Unknown. *A. Worsley, Isleworth.*

BULB FLIES.

Cultivators of Narcissi, whether for pleasure or profit, suffer considerable losses as the result of depredations of various pests. Among the more important of these are the flies commonly known as Narcissus or bulb flies. The purpose of this article is to suggest suitable methods of control, with a view to reducing the amount of damage attributable to these insects, which at present appear to be increasing appreciably in Great Britain.

It cannot be pointed out too often that, before really satisfactory control measures can be devised against any pest, it is essential to understand fully the life-history of the creature. It is therefore proposed briefly to sketch the habits of the flies before turning to the consideration of possible controls.

The large bulb fly, Merodon equestris, is closely related to the common and beneficial hover flies. It is about the size of a small humble bee and of similar appearance, being covered with long hair, which is usually arranged in brightly-coloured bands. These bands may be red, black, yellow or white, but sometimes the fly is brown or black all over. No particular significance attaches to the variation in colour, at least from the economic point of view. The fly may at once be distinguished from the humble bees by the fact that it possesses, as do all flies, but one pair of wings. The adult flies appear first towards the end of April. During May and early June they lay eggs, singly, on or near Narcissus bulbs, and may often be seen congregated in warm corners of the bulb garden, or flying rapidly too and fro over the bulb beds.

The actual site selected for the egg is of importance. At the time that the eggs are laid, the foliage of many varieties of Narcissi is dying down. The soil is frequently dry and, as a result of the shrivelling of the foliage, a crack in the soil is often left, extending sometimes actually down to the bulb itself. The egg is placed on the foliage, on the earth surrounding the bulb or sometimes on the bulb itself. In a few days the egg hatches and the small larva immediately travels down the aperture in the soil and bores into the bulb. Having reached the centre, it bores through in a longitudinal direction, usually destroying the growing point and sometimes the whole bulb. In other cases, numbers of adventitious buds develop around the destroyed growing point, and eventually large numbers of small bulbs are formed, which in the next season throw up a circle of small foliage referred to as "grass" by commercial growers.

The larva is a large sluggish creature, resembling a leather-jacket in appearance. It remains in the bulb during the whole summer and subsequent winter, leaving it in April and pupating in the soil nearby. The adult emerges, as previously mentioned, late in April or early in May. It is thus seen that only one generation of the fly occurs each year.

The lesser bulb flies, Eumerus tuberculatus and E. strigatus, are of very similar appearance and identical in habits, and may for our present purpose be considered as one.

The adult flies are slightly larger than house flies, but they are much flatter and broader. They are of a bronze, metallic colour, like some of the smaller wild bees, from which they may be distinguished, as in the previous insect, by the possession of only one pair of wings. In addition, they may be identified by six pale white or greyish coloured, crescent-shaped marks on the upper side of the abdomen.

These flies appear at the same time in the spring as do the large ones, and may be seen darting rapidly over the bulb-beds, a few inches from the ground, or settling on the foliage. Eggs are laid in the same positions as are those of the former fly, with the difference that, instead of being laid singly, they are laid in batches of from three to fifty at a time. Usually the batches each consist of from five to twelve eggs.

Small maggots emerge from the eggs, after a few days, and these immediately crawl down to the bulbs, but instead of making for the basal area they usually congregate at the point where the dying foliage joins the neck of the bulb. Here they commence to feed, at first on the rotting tissue, and then, as they grow stronger commencing to break down the living bulb, which, if they are at all numerous, they quickly reduce to a hollow shell of rotting matter.

These first-generation larvae feed up rapidly and at the end of about four weeks leave the bulb and pupate in the dry outer scales, or in the earth, and two or three weeks later emerge as a second generation of flies. These flies again lay eggs, and the resulting maggots enter bulbs as before. The majority of them feed more slowly than those of the previous generation and remain in the bulbs until the following March, when they leave the bulbs, pupate and emerge again as adult flies. A few larvae do, however, feed up quickly and produce a partial third generation of flies in September and October of the same year. These latter flies have never been seen to lay eggs.

It may be stated that the rather generally held opinion that the lesser bulb flies lay eggs only on bulbs already diseased, is incorrect. It has been abundantly proved that the flies oviposit on, and the resulting maggots attack and destroy, bulbs which were previously sound. Furthermore, both the large and the lesser flies oviposit freely on bulbs exposed on the surface of the ground, and it will be shown that this has an important bearing on the control measures which can be adopted against these pests.

REMEDIAL TREATMENT OF BULBS.

All bulbs which feel soft and spongy should be rejected at the time of planting, as they very likely contain fly larvae. Rejected bulbs should be destroyed by burning or burying in a deep hole. If they are merely left lying about the grubs in them will be able to mature, and in due course produce flies, which will return and attack other bulbs. If not destroyed, they should be subjected to one of the following treatments:—

Hot-water treatment.—The immersion of dormant bulbs in water, at a temperature of 110°F., for a period of three hours, is universally adopted as a method of destroying bulb eelworm (Tylenchus dipsaci). This method of treatment is widely-known, and need not be described here. Sufficient to say that it will destroy also all bulb fly larvae and other pests in the bulbs.

Fumigation of bulbs with paradichlorbenzene will destroy the larvae, if correctly carried out. It is an excellent method of dealing with a small quantity of bulbs, when a hot-water apparatus is not available. The bulbs must be placed in an air-tight container and sprinkled with crystals of the substance, using four ounces to every cubic foot of space. The bulbs must be left in the container for five days and then removed and aired well. An old biscuit-tin makes an excellent receptacle in which to treat a few pounds of bulbs.

PREVENTIVE TREATMENT.

It is a common practise to ripen lifted bulbs by leaving them exposed on the ground for some time after digging. The practise is not altogether good in itself, for serious damage frequently results after such treatment, as a result of sun scorch. Further, at the time that many Narcissi should be lifted, bulb flies are still ovipositing, and the bulbs thus fall an easy prey. The flies will not lay eggs under the most primitive of shelters. Bulbs should therefore be spread to ripen in an open shed, or if large numbers have to be handled, under a rough shelter which may very conveniently be constructed from a few posts and sheets of corrugated iron.

Small heaps of damaged and otherwise worthless bulbs may conveniently be left as decoy heaps in places where the flies are abundant. Large numbers of eggs will be laid on the bulbs, which may subsequently be removed and destroyed. Care should be taken not to leave the heaps out for too long, as it must be remembered that the flies mature in six weeks in the summer, and some may emerge from the heaps if they are left for that length of time.

It has been shown that the fly larvae cannot locate bulbs in the soil if the necks of the bulbs are well-buried. Normally, at the time of maximum oviposition, namely, May and June, the bulbs are more or less exposed, owing to the dryness of the foliage and the cracking of the soil. The simple process of raking over, harrowing or cultivating the bulb-beds, in almost any way, will have the effect of filling in the holes and cracks around the bulbs, and thus rendering them far less liable to be attacked. This procedure should always be adopted with those varieties which have practically lost their foliage at that time. With varieties in which the foliage is only yellowing, the same result may be obtained by cutting the foliage over and afterwards roughly earthing up the cut ends of the leaves and flower stalks. This procedure will not hurt the bulbs. Varieties which carry vigorous foliage late into the summer are best left alone. Observation has shown that the flies are not likely to attack them very seriously, for in the case of the lesser flies, at least, there is no suitable starting off point for the larvae to commence their attack.

In conclusion, it may be stressed that, while there is no golden rule for destroying all bulb flies, a combination of methods will greatly reduce the damage attributable to them. The simple cultural methods of raking over the beds earlier than is the usual practise, and drying and ripening the bulbs under cover, however primitive such cover may be, will, to a considerable degree, bring about the desired reduction in the number of bulbs lost as a result of attack by bulb fly larvae. *W. E. H. Hodson, A.R.C.S., Newton Abbot.*

THE CULTIVATION AND USES OF HENNA.

HENNA (Lawsonia alba, Lam.) has been cultivated in the east for centuries, with the result that it is very difficult to determine where the plant is really indigenous. Probably, however, it is a native of Arabia, Persia and countries on the north African coast. The shrub is a member of the Natural Order Lythraceae, and is the sole representative of the genus Lawsonia. It is true that two species were distinguished by Linnaeus, L. spinosa, with spines, and L. inermis, without; but these are now usually regarded merely as forms of L. alba, the difference being thought to be the result of age.

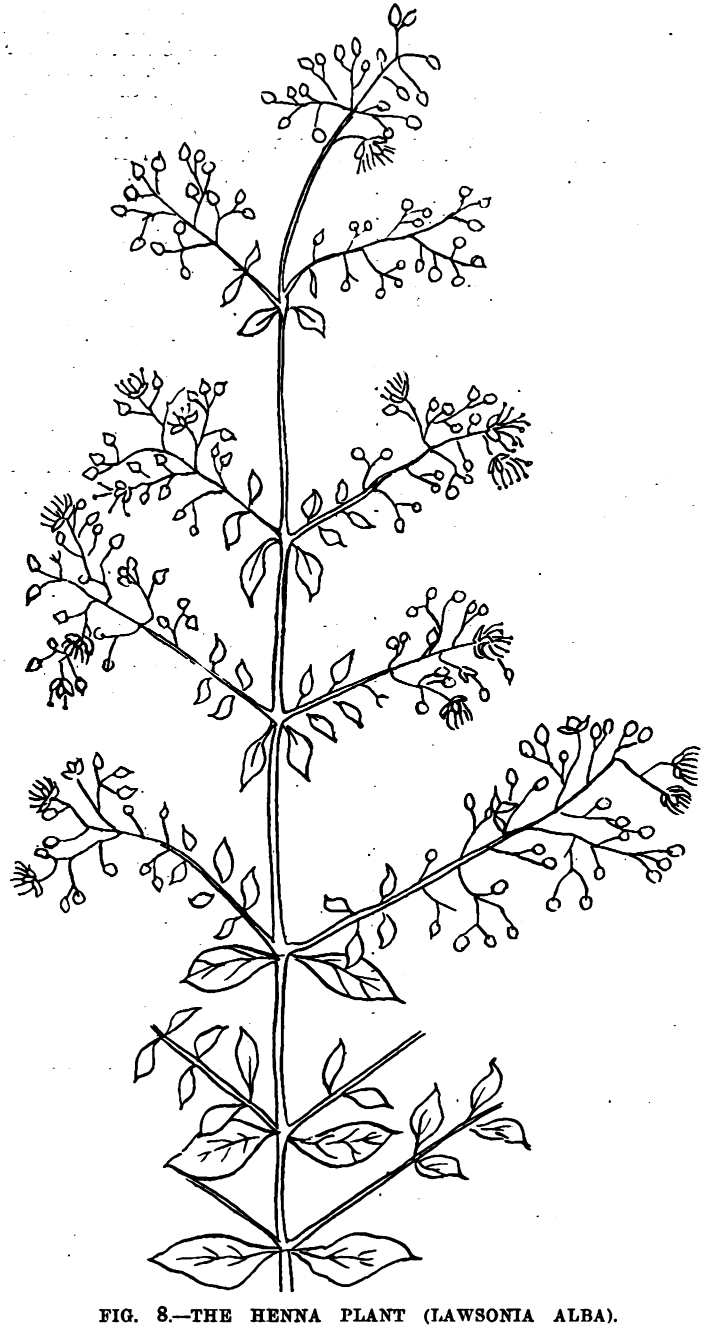

FIG. 8.—THE HENNA PLANT (LAWSONIA ALBA).

In the east, Henna finds many uses. The powdered leaves are employed by the ladies as a cosmetic, for dyeing their finger-nails, the palms of their hands and the soles of their feet red, this being a custom universal among Mohammedan women and one practised to some extent by Hindus also. The powder is also used as a hair-dye, either alone to dye the hair red, or mixed with "reng"—powdered leaves of Indigofera argentea—to produce a fine blue-black. The fragrant flowers are employed by eastern women for purposes of personal adornment, and an oil is distilled from them which is used, in the east, as a perfume.

It is uncertain whether Henna possesses any therapeutic properties; but in India and elsewhere in the east it is credited with marvellous medicinal powers, and various preparations of it are employed for treating a number of diverse diseases. Poultices made from the roots or leaves appear to be effective in relieving sore feet; the same, unfortunately, cannot be said of a decoction of Henna as a cure for leprosy, although used for this purpose by natives in India. There is a tradition that Mahommed dyed his own beard with Henna and declared it to be the "best of all herbs," which may account for some of the more fanciful applications to which Henna has been put in Mohammedan countries, such as burning the seeds to drive away evil spirits.

The real use of Henna as a hair-dye, however, has made it a plant of considerable industrial importance, large quantities of leaves being imported each year into Europe for this purpose. Henna owes its peculiar efficacy as a hair-dye to the presence of a hydroxynaphthaquinone, first isolated from the leaves by Tommasi, and christened "lawsone," which acts as a substantive red dye towards the keratin of living human hair and skin. Henna is popular as a hair dye, because of its innocuous character. To produce a range of shades, other dyestuffs, not always equally inoffensive, are incorporated with it.

Lawsonia is a shrub, normally attaining a height of from six to nine feet, and bearing an abundance of leaves and small, very fragrant flowers of a whitish colour. The leaves are opposite, glabrous, undivided, and elliptical in shape, with pointed ends. They vary in size from about one to one-and-a-half inch long, by one-half- to three-quarters-of-an-inch broad. The colour of the flowers is variously described as greenish-white or creamy-yellow, climate and the method of cultivation probably having some effect on this, as it appears also to have on the number of stamens, which, normally eight, is stated usually to be only four in the case of shrubs growing in Egypt.

As mentioned already, Henna is widely cultivated in the east. There are many plantations in India, China, Persia, Egypt and especially Tripoli. This shrub has also been naturalised in Jamaica. In England it can only be grown under glass, in a hot-house; there are some living plants in the Kew collection, but they do not flower.

In India, Henna shrubs are used for hedges in some places, and are planted in gardens, finding favour because of the fragrance of the flowers. When, however, Henna is grown for commercial purposes, the shrubs are not allowed to flower, but are cut down, usually twice a year. This treatment facilitates the growth of an abundance of leaves, which constitute the economically valuable part of the plant. The shrubs may be grown from seeds or propagated by means of suckers or cuttings, and thrive best in a damp soil.

The harvest takes place in February to May, and again in August to November, being a month or two earlier in Tripoli than in India. The cut stems are stripped of their leaves, which are dried in the sun and finally powdered, the shrubs continuing to yield leaves over a period of twelve years or more. The amount cut each time varies in the different countries in which Henna is cultivated. In Tripoli, where the plants are cut practically to the ground, the annual yield of dried leaves per acre is about fifteen to nineteen hundredweights.

Lawsonia alba rejoices in an abundance of popular names, such as Indian Privet, Egyptian Privet, Jamaica Mignonette, Reseda de Cayenne, etc., which, if botanically misleading, bear testimony to the wide distribution of the plant.

My best thanks are due and are hereby tendered to the Director of the Royal Botanic Gardens, Kew, for valuable information concerning Henna, and to Miss V. A. Venables for kindly preparing the sketch of Henna in bloom (Fig. 8), illustrating this article. *H. Stanley Redgrove, B.Sc., A.I.C.*

PLANT HISTORY IN NOMENCLATURE.

(Continued from p. 470, Vol. LXXXIV).

TOBACCO AND ITS DERIVATIVES.

If the Poppy with its opiate is associated with war, Tobacco fills the pipe of peace, and therefore merits our next consideration. Only when we come to study the subject in detail does it dawn upon us how greatly Tobacco has affected our vocabulary. The "fragrant weed" as it is fondly called by the devotee, is the leaf of a plant known to science as Nicotiana. It was so named in honour of M. Nicot, a French Ambassador to Portugal, who first obtained seeds from a Dutch merchant about 1560, and sent the plant to Catherine de Medici. It thus came about that a large genus of plants belonging to the Nightshades (Order Solanaceae) was eventually included under the name, while the essential principle came to be known as Nicotine. The term Nicotian, meaning that which pertains to Tobacco, comes from the same source, and is the equivalent of the French *Nicotiane.* This is only one of many plant-names derived from those of distinguished men.

Turning to the word Tobacco, we find that it is, by some, stated to be derived from a place-name. Just as Damson comes from Damascus, and Currant from Corinth, so Tobacco is popularly said to be derived from Tobago in the West Indies, or Tobasco in Mexico. That, however, is very doubtful. In any case, it comes to us in the first place through the Spanish *Tobaco,* and is included by Brachet in his *Etymological French Dictionary* among the words of Spanish origin which came into French at the end of the sixteenth century. In his *History of Mexico,* Clavigero informs us that it was taken from the language spoken in Hayti. Tobacco is the Cuban name for the pipe, or tube for smoking, and elsewhere the word Tobaco is used for the pipe as well as for the weed. From Tabaco the French have derived such terms as *tabac, tabagie* and *tabatiere* or *tabaquière,* while in England we speak of the tobacconist, and have produced a number of compounds into which the word Tobacco enters.

In China and the East, Tobacco is not less popular than Opium, and the study of the word *In,* which originally means 'smoke' in Chinese, is very suggestive, since it shows that the Celestial Dictionary is as largely affected by plant-history as our own. A great deal might be written about the secondary effects of Tobacco smoking on languages, but it would take us too far afield to deal with such terms as buri, shisha, kiseru, tung, hookah, nargileh, kalyan, hubble-bubble and the other words employed in many tongues for the water-pipes which are in almost universal use in eastern lands.

Tobacco is largely grown in China, and some useful remarks on the subject may be found in Gray's *China* (Vol. II, 146, seq.). The author remarks on the use of the hookah in Canton. It is not, however, known under that name, but Gill, in his *River of Golden Sand,* tells us of an old man who had been to Lhassa, and informed him that the people in that city smoked hookahs, the body of which was made of brass while the long stem was of wood. The old informant added that fire was put in at the top, and described the water-pipe exactly, using the very word hookah. Every traveller is aware of the value of Tobacco in places which are little in touch with the outside world. To smoke with the natives is usually to secure their good will, and a pipe is the symbol of peace.

That Tobacco was originally smoked in pipes seems clear from the fact already mentioned that the word Tobaco means a pipe in some of the American languages. But the leaves are also used for making cigars and cigarettes, and thus we come to a totally new set of words. Cigarette is, of course, simply a diminutive of cigar, a word which, like Tobacco came to us through the Spaniards. It is sometimes spelled segar, but the Spanish form is cigarro, "originally a kind of Tobacco from Cuba." Its French form is cigare. Cigarro must not be confused with Cigarra the Spanish name for a grass-hopper or the Cicada, otherwise named a Cicala. In the east, cigars are greatly in request, and travellers have much to say about them, their names and qualities, and the estimate which is formed of the smoker by the brand which he affects. Smoking one kind he may pass as a prince; he sinks to a pauper if he uses another. In China, as among ourselves, they bear the names of the countries or places from which they are introduced. Hence, they speak of the Makoo or the Luisung as we do of the Manilla or Cuban.

If we would rightly estimate the influence of Tobacco on language, however, we must remember that it has not only been shredded, and so used in the pipe or for making into cigarettes, but that it has been used in other ways. While the sailor has his twist and the villager his quid, the swell has his cigar, and the student or politician has, or used to have, his pinch of snuff.

While the pipe has had much skill lavished upon it, the snuffbox has probably had a much greater influence on art, especially those branches which more immediately concern the goldsmith, silversmith, enameller, jeweller, japanner and miniature painter. This, however, is a branch of study which, while immediately concerned with the plant under review, does not affect the dictionary or bear upon nomenclature.

Our subject would not, however, be exhaustively treated if we did not notice how the word "smoke" in connection with tobacco has entered into the amenities of life, and extended, if it has not greatly enriched, our vocabulary. On the train we find our smoking compartments, in hotels the smoke-room or smoking saloon, and without the smoking concert many a charitable institution would soon decline for want of funds.

The spittoon is now very much a thing of the past, but it was once, like the "churchwarden" a smoker's requisite. The name Smoke-wood, or Smoking-cane, is frequently applied to the Traveller's Joy (Clematis) on account of its stems being used by boys in the place of a cigar.

While the Tobacco plant is known to be a native of America, its cultivation in many other lands has for some centuries been a remunerative industry. Some maintain that the produce of the plantations in southern Rhodesia bears the palm, while others maintain that Cuba or Manilla remain unrivalled. The Chinese obtained seeds at the same time as ourselves from the Spanish, Dutch or Portuguese traders, and have ever since been keen cultivators of the fragrant weed, although they still import the choicest kinds. Half-a-century ago, I saw magnificent Tobacco plantations at Kong-mun in the province of Kwang-tung. So early as the year 1641, the reigning Emperor issued an edict forbidding his Manchu subjects its use. Popes, kings and emperors have, however, issued their counterblasts in vain. The smoking habit grows, and until man has learned to live without the use of narcotics, opiates, stimulants, sedatives, anodynes and palliatives, we must, perhaps, admit that the least injurious of these is "the fragrant weed." *Hilderic Friend.*

(To be continued).

THE GENUS PRIMULA.

(Continued from p. 510, Vol. LXXXIV).

HYLOPHILA (Balf. f.). Thin-leaved P.
(Petiolaris-Davidi.)

A BEAUTIFUL perennial species with a rosette of membranous leaves about three-and-a-half inches long, with elliptic or oblong-elliptic blades about two-and-a-half inches long and one-and-a-half inch wide, rounded at the tip, more or less abruptly contracted at the base into a short stalk about one inch long; margins furnished with short, irregular teeth ending in horny points; both surfaces thickly dotted with glands and sparsely downy. Flower stem slender, glandular-downy, about two-and-a-half inches tall, bearing from two to eight lilac-rose blossoms on stalks about three-quarters-of-an-inch long, in a wide, loose umbel. Corolla flat, about three-quarters-of-an-inch across, divided into five broadly heart-shaped lobes, cleft into rather narrow, rounded segments; tube white, about half-an-inch long, cylindrical below, swollen upwards but constricted at the mouth, where there is a ten-lobed, white-rayed ring, tinged green beneath. Flowers in April and May. Not in cultivation.

Grows in cool, shady gorges, sometimes in loose limestone and also on rotten tree trunks, in the forest regions of northern Burma and southern Yunnan, at 7,000 feet to 9,000 feet above sea-level.

Culture: Friable, calcareous loam, Oak or Beech leaf-soil and sand, in a damp, cool, shady spot, with protection in winter, are the conditions indicated.

HYMENOPHYLLA (Balf. f.). Membranous-leaved P.
(Cortusoides.)

A moisture-loving perennial considered to be a sub-species of P. polyneura, with a tuft of long-stalked, erect leaves about six inches long, with thin, rounded or elliptic blades, heart-shaped at the base, about three inches across, very deeply divided into eleven blunt lobes, margined with two to three fairly sharp teeth; both surfaces more or less downy; stems stout, sparsely downy. Flower stem about twelve inches tall, sparsely downy, bearing an umbel of about half-a-dozen purple blossoms on erect, downy stalks about three-quarters-of-an-inch long. Corolla over three-quarters-of-an-inch across; tube cylindrical, downy outside, with a ring in the mouth. Flowers in July.

Grows in wet alpine pastures near Doker-La, Tsarong, south-eastern Tibet.

Culture: Grow it in friable loam and leaf-soil in a damp, cool spot with an easterly exposure.

HYPOLEUCA (Hand.-Mzt.). Pearl-leaved P.
(Malacoides.)

This plant is probably of biennial duration only, and appears to be a sub-species of P. Forbesii. It produces a many-leaved rosette of oblong-elliptic leaves three-quarters-of-an-inch long by half- to three-quarters-of-an-inch wide, rounded or nearly square at the base and tip, borne on narrowly-winged stalks about equalling the blade in length; margins furnished with small lobes or coarse teeth; upper surface more or less smooth, underside coated with greyish-white meal. Flower-stem seven to ten inches tall, erect, bearing two to three superposed umbels of four to ten blossoms placed some two inches apart up the stem, on stalks half-an-inch to one inch long. Corolla rose-coloured, about half-an-inch across, divided into five heart-shaped lobes; tube cylindrical, about a quarter-of-an-inch long. Flowers in June. Not in cultivation.

Grows among reeds and marsh plants, on the borders of Lake Kunyang-Hai, in Yunnan, western China, at about 6,000 feet above sea-level.

Culture: The conditions indicated are a compost of peat and leaf-soil, kept saturated when the plant is in active growth.

IMPERIALIS (Jungh.). Imperial P.
(Candelabra.)

A robust perennial species with a tuft of spathulate foliage, with elongate-egg-shaped, blunt blades, two to five inches across, tapering to winged stalks, in all from four to sixteen inches long; margins sparsely toothed; both surfaces more or less smooth, non-mealy, rugose. Flower-stem stout, one to two-and-a-half feet tall, mealy upwards, bearing several many-flowered umbels of golden-yellow, orange-tinged blossoms. Corolla flat, about three-quarters-of-an-inch to one inch across, divided into five broadly heart-shaped, notched lobes; tube about twice as long as the calyx, cylindrical, dilated upwards, with an obscure ring in the mouth. *Bot. Mag.*, t. 6732. Introduced in 1891.

Grows in damp, shady places on the mountains of Java, at from 8,000 to 11,500 feet above sea-level.

Var. gracilis (Pax) is dwarfer than the type and has flowers about half-an-inch across, with their calyces densely covered with yellow meal.

Culture: Grow it in good, somewhat heavy loam, in a damp, half-shady spot, with protection from severe frost.

INAYATII (Duthie). Inayat's P.
(Nivales.)

A strong-growing species with flowers too small to be of any great decorative value. It produces a loose tuft of thin, flaccid, lance-shaped leaves, broadened at the tip, where they are either rounded or slightly pointed, and tapering at the base into a narrowly-winged stalk, in all nearly twelve inches long; margins furnished with recurved teeth; upper surface dark green, smooth, underside covered with silvery meal. Flower stem nine to fifteen inches tall, stout, downy upwards, bearing a loose, rounded umbel of six to twelve pale lilac blossoms, each with a yellow eye. Corolla about three-eighths-of-an-inch across, divided into five broadly heart-shaped, shallowly bifid lobes; tube short, cylindrical. Flowers in February and March. *Gard. Chron.*, 1923, Vol. LXXIII, Fig. 59, p. 121.

Grows on wet rocks in the Siran and Kagan Valleys, in the north-western Himalayas, at 4,500 feet above sea-level.

Culture: Good, somewhat heavy loam, in a damp spot, in sun or half-shade, should suit it; it is hardy and easily grown.

INCANA (M. E. Jones). American Hoary P.
(Farinosae.)

This dwarf, deciduous perennial is a sub-species of P. farinosa. It has a short root-stock with fleshy, fibrous roots and a rosette of oblong, oval, elliptic-oblong or oblong-lance-shaped, blunt leaves one to three inches long, gradually tapering to short, winged stalks; margins sinuately toothed above the middle, or nearly entire; upper surface green, at times slightly mealy, underside coated with white meal. Flower stem rather stout, four to eight inches tall, coated with white meal and bearing a dense umbel or head of eight or more lilac or purple, yellow-throated blossoms, sessile, or on stalks up to half-an-inch long. Corolla flat or slightly concave, about three-eighths-of-an-inch across, with broadly heart-shaped, notched lobes; tube cylindric, about three-eighths-of-an-inch long, slightly longer than the calyx.

Grows in swamps, wet meadows and bogs, in the Rocky Mountain regions of Montana, Wyoming, Alberta and Colorado.

Culture: As for P. farinosa, but is an easier plant to cultivate.

INCISA (Franch.). Incised-leaved P.
(Souliei).

A beautiful species with a tuft of scabrid leaves with oval, pointed blades half-an-inch to 1-inch long, tapering to a slender stalk from two to three times longer than the blade; margins furnished with sharply-cut teeth, or at times almost entire or lobulate; both surfaces clothed with short, stiff, rough hairs. Flower stem smooth, slender, two to six inches tall, bearing an umbel of two to six rose or violet blossoms on short, slender stalks. Calyx sparsely coated with golden-yellow meal. Corolla concave, about five-eighths-of-an inch across, divided into five broadly heart-shaped, very deeply bilobed segments; tube slender, cylindrical, dilated upwards, almost twice as long as the calyx. Flowers in April and May. Not in cultivation.

Grows in wooded regions near Moupine, in eastern Tibet.

Culture: Good loam and Beech or Oak leaf-soil, in a cool, shady, moist spot, with protection from wet in winter, are conditions most likely to suit it. *A. W. Darnell.*

(*To be continued*).

THE CAMOMILE OR SCENTED LAWN.

IN an interesting and suggestive article, Mr. Hay (see p. 491, Vol. LXXXIV), pleads that in reproducing the formal gardens of a past age, we might with advantage add to them the Camomile lawn, presumably for the turf surrounding or in the immediate vicinity of such old word gardens. Our thanks are due to him for the reminder, and if Camomile lawns are desirable, no doubt means will be found to produce them; we could also go farther, and add our own enterprise to the legacy of knowledge left us by the old writers. True, the Camomile has an aromatic scent, but that of many other dwarf plants is even more agreeable. If these could be induced to form a sward or were incorporated in the turf, it would be possible to have a scented lawn.

Those who have walked over the Sussex Downs know how springy is the turf, and how delicious the scent wafted back on the breeze from the footsteps of others in front. If we examine the sward we find the grass thickly interspersed with minute herbs, many naturally dwarf, others rendered so by their situation and the constant nibbling by sheep and rabbits. Among hundreds of interesting plants, those which contribute most scent are the Wild Thyme (Thymus Serpyllum), Corn Mint (Mentha arvensis), Marjoram (Origanum vulgare), Camomile (Anthemis nobilis) and Yarrow (Achillea millefolium), all reduced to a close mat of herbage very little taller than the grass on a lawn when shorn by a motor-mower.

It is a fact that many plants will make a close turf under the same treatment that we accord to our lawns. Few would suspect Gorse or Ling of doing so, yet both will combine with grass to form a thick sward. This is particularly noticeable where the lawn mower has been used over paths that pass through heaths or other comparatively wild country. The fact that they do not under such conditions produce seeds adds to their longevity. Some readers may be doubtful how long Camomile will exist in mown grass; probably it depends on how well the grass is fed. To my knowledge, Camomile has grown on Staplefield Cricket Ground, between the pitches, for upwards of thirty years During a bout of "stonewalling" and while waiting for another partner, its verdant character first attracted my appreciation: naturally, I regarded it, a new lawn plant, as my own discovery, but now the allusion is shattered. Verily; there is nothing new under the sun!

Probably I shall be told that scented lawns were well known to the ancients. Anyway, I can imagine a sunny terrace made wonderfully attractive by planting and mowing regularly a sward composed of a number of sweetly-scented, dwarf herbs. Besides those previously mentioned, all of which grow easily under cultivation, there is the Caraway-scented Thyme (Thymus Herba-barona), Lemon Thyme, a well-known variety of the wild Thyme, Pennyroyal (Mentha Pulegium) and Mentha Requienii; the Corsican Mint would be suitable for the moister and more shaded spots. There is no lack of scented plants, the only difficulty at first would be to choose the best.

It is astonishing how readily many small plants will establish themselves among grass that is not over-fed, and yet regularly mown. At Nymans we have the minute Veronica repens threading through the grass, and flowering thickly in springtime below the cut of the mower. I have also seen Selaginella Kraussiana fully established among grass in a shady corner.

It would be doubtful, until decided by experiment, if herbs alone should compose the turf or whether they should be planted at the same time the grass seeds are sown. It would be useless to plant in established turf. These, however, are details which could be easily determined by anyone with the time and patience to give the making of a scented lawn a trial. *J. Comber, Nymans Gardens.*

I WAS much interested in the above subject discussed so admirably by Mr. T. Hay. He states that "the full story of the lawn has yet to be written." While that is true to-day, it is quite possible that someone may repeat the statement in 2028. I have known a Camomile lawn since some time in the nineteenth century, and possibly Mr. T. Hay had the same lawn in view while he wrote. If so, it would be unwise to make it public, for good reasons. Furthermore, I have seen a Camomile tennis lawn, and whether or not the owners knew of the presence of Camomile, I cannot say; but there was no evidence of an attempt to eradicate it. The plant was perfectly native to the soil on the lawn and over an extensive area outside it. On the clay soils of Surrey, lying to the south of the North Downs, Camomile (Anthemis nobilis) is seldom absent from any village green, and gives off a very agreeable odour when walked upon. Looked at from this point of view, Camomile lawns, open to the public, are numerous, although few people record it.

If my memory serves me right, Evelyn lived in the region to which I refer, and in that case he could have obtained an idea of a Camomile lawn from the natural surroundings. The modern lawn at its best consists of grasses only, but the late Shirley Hibberd once advocated the Pearlwort (Sagina procumbens) for the making of lawns in some situations at least. Model lawns of this are occasionally seen at the meetings of the Royal Horticultural Society. In the early seventies of the last century, Chrysanthemum Tchihâtchewii was recommended as a subject for dry banks. It is a procumbent perennial, similar to Camomile, and might make a lawn on sandy soils. Has Thymus Serpyllum ever been tried for the making of a lawn on dry soils? *J. Fraser.*

NOTICE OF BOOK.

The Pear and its Culture.

In this book,* written for both the amateur and the commercial grower, the author has brought together the more important items in the culture of Pears, as carried out in America. That country, he states, has no native Pear. All the varieties found in the New World have come from the Old at one time or another. These in turn trace back to a common ancestry somewhere in Central Asia. From this original form there have finally evolved two general groups of species, oriental and occidental. Of the latter group, there are only two species of importance, so far as Pear culture is concerned to-day. One, Pyrus nivalis, the Snow Pear, is grown in eastern Europe and Asia Minor only for making perry.

The second species, P. communis, is much more important, since from it have come all but a very few of the 5,000 varieties that have been described in the literature of Pears from time to time. The oriental Pears supply several species of growing importance, chief among which is the Sand Pear, P. serotina culta. This is readily distinguished from the common Pear by its broad, ovate, long-pointed and sharply-toothed leaves; by flowers that appear before the leaves; and by fruits often Apple-shaped, russetted, and long-stemmed, and with calyces which drop with the fruit. It is found growing wild in Mongolia, and has spread into both China and Japan, where it is cultivated. From Japan the Sand Pear was taken to Europe, and from thence to America. The fruit is hard, long-keeping, and of very little value except for preserving. The species is, however, of importance to American growers on account of the hybrids which have sprung from crosses made between it and the common Pear, to give such varieties as Kieffer, Garber, and Le Conte. These hybrids have, from their oriental blood, a tolerance of heat, drought and light soils, to say nothing of "blight" resistance, so that, through them, Pear culture has been greatly extended into southern sections of the United States. Unfortunately, these varieties are not of the best, for the oriental Pear stamps its poor quality upon its offspring.

None of the other species from the Orient are of value so far as fruits are concerned, but because of the "blight" resistance of some they are receiving attention as stocks upon which to propagate the common Pear. American growers feel the need of better stocks for this purpose. At present their trees are usually propagated on seedling stocks imported from Europe. These are open to the objection that they form suckers freely, and disease is liable to find its way to the roots through the suckers. Trees on Quince are grown to some extent by amateurs; but the planting of dwarf trees has been discontinued in commercial orchards, because they are difficult to grow in the nursery and demand too close attention in the orchard, and because they often strike root above the stock and become standards.

Two forms of tree are grown, vase-shaped and central leader. In the case of the former no central leader is permitted to form, and the middle of the tree is open to light and air. It has the further advantage that, if fire-blight is severe, less damage is done by attack upon one of the limbs than upon the central leader of the other form of tree. On the other hand, the close-centred tree is considered to be better-suited to some conditions. It requires less detailed attention, and carries more fruits because the tree grows larger; and it comes into bearing earlier as a result of less pruning. This type shows the natural habit of the tree, one shoot ascending and the branches coming from it at various points along its length. When the tree has reached the desired height the leader is not permitted to go further. The central leader tree appears to resemble our pyramid form, except that it is not pruned anything like so severely.

Pruning is reduced to a minimum, largely because fire-blight, a kind of bacterial canker, which is the chief dread of the Pear-grower in America, is most liable to attack the soft shoots produced by severe pruning. Once the foundation of the tree has been laid, pruning consists of little more than thinning out, removing shoots that are not wanted rather than shortening those that are left. Earlier bearing is also induced by this system. Keiffer trees are, however, commonly tipped annually in some districts. In the Pacific coast States, especially California, a system of tying and spreading the branches has been developed, which has induced early fruiting with a minimum of pruning. The idea is to keep the branches "off centre" by tying to one side by means of string and a peg in the ground. With regard to the pruning of old trees, the author remarks that a tree past its prime must be restored to new vigour if it is to continue to bear profitable crops. Old trees frequently bloom profusely, but set few fruits, although the trouble is not one of pollenation. Usually it is lack of sufficient vigour to carry the fruits. One method of renewal is to cut off half the old spurs so that the energy of the tree may go into the remaining ones. Another procedure is to cut back severely to outside lateral branches so as to build up an entirely new fruiting top.

Pollenation is said to be of special concern to Pear-growers, not because there is more sterility among Pears than other fruits, but because the varieties most grown are commonly self-sterile. But a variety may be self-fertile in one locality and self-sterile or partially so in another. There are orchards composed entirely of Bartlett Pears, usually a self-sterile variety, which are apparently self-fertile, although the fruits have few seeds and are small.

Although this interesting little book is written from an American standpoint, it is quite likely that English gardeners could adopt some of the methods described. *M. G.*

GARDEN MANURES FOR JANUARY.

As the choice of a site for a fruit orchard or plantation will depend on a number of factors connected with the soil, climate, variety, etc., so will the system of manuring followed depend on similar factors, and both aspects of the subject are deserving of the most serious consideration, as error of judgment in either respect often leads to far-reaching results which are difficult to remedy.

It would be as difficult to point to any one type of manure as being ideal for fruit cultivation under all conditions as to assert that any one type of soil is the best for the purpose, nevertheless, the type of soil must necessarily be taken into consideration when formulating a system of manuring. Writing generally, most fruits do best in soils of a loamy texture; it may be a sandy loam or a clayey loam, but should not run to extremes in either direction. The soil and subsoil should be of such a physical character and depth that ample space is available for healthy root action, without which intensive feeding cannot be satisfactorily pursued. It is desirable that the surface soil contains sufficient humus to ensure a reasonable degree of natural fertility, at the same time soils containing an excessive amount of humus are not conducive to the production of fruiting wood. In the selection of a suitable soil it is well to use nature as a guide, for land which favours the growth of native fruits will, as a rule, possess the characteristics desired for the successful cultivation of our standard fruit crops.

But after every consideration has been given to the selection of the site, the preparation of the ground, and the planting and final establishment of the trees, it is probably not too much to say that fruit-growing, particularly on a commercial scale, is hardly possible, except some systematic form of manuring is practised. It is quite true that in exceptional cases the trees will make good growth and produce crops of fruits when no manure is applied, but even on such soils judicious applications of the proper fertiliser would improve the yield and quality and keeping ability of the fruits. It often happens that fruits from unmanured trees are lacking in one or more of these points, and the inferior flavour and keeping ability of some fruits may be due more to the fertilising factor than we realise.

A fruit tree, like other plants, requires a number of chemical elements for wood-making and fruit-producing, and unless it receives such in the right proportion there is likely to be trouble. It is undeniable, of course, that moisture, physical condition of the soil, the prevalence of insect pests and diseases and climatic conditions play their part in the general result; but an unbalanced food supply, whether that is naturally or artificially applied, is at the bottom of not a few failures to obtain the best results.

It follows, then, that a tree will require somewhat different treatment, both in quantity and composition of the manure applied, according to the age, size and productive capacity, the nature of the soil and climatic conditions, the particular kind of fruit grown, and even the market demands. During the early years of development the objective should be a rapid and healthy growth of well-formed trees which will reach bearing age and size in the least possible time. Other things being equal, a manure most likely to obtain satisfactory results in this respect should contain a fairly high percentage of nitrogen which should be applied at suitable times, in combination with an efficient system of cultivation and otherwise good growing conditions. It is not easy to lay down any hard and fast rule which will be applicable to all fruit trees under all conditions, as such factors as the quantities it will pay to apply must, in the nature of things, vary considerably with local conditions.

The amount of fertiliser a bearing tree will utilise profitably depends entirely on its condition and ability to bear fruits, and on the value of those fruits on the market, and while nitrogen plays an important part, particularly in the early growth of the tree, it should be borne in mind that a heavy crop of fruits takes large quantities of phosphorous and potash from the soil. The application of a complete manure is thus essential, and trees in good condition, bearing valuable crops of fruits, will require their fertiliser application to be increased over those in less good condition and bearing less heavy crops. Experienced growers regulate both the amount and composition of the fertiliser applied to the needs of the tree and to suit local conditions, and it is not due to chance that certain brands of fruits have become famous in world markets, but to the fact that the growers of these brands have studied the food requirements of their trees and applied fertilisers accordingly.

Whether a complete fertiliser is applied as a mixture in one dressing or in elemental forms at different times may be a matter of opinion, and excellent results have been obtained from both methods, but the time of application is governed by the solubility or insolubility of the fertilisers applied, and those who favour the use of calcium cyanide, basic slag and kainit should no longer defer application or satisfactory results cannot ensue in the coming season. *W. Auton.*

HOME CORRESPONDENCE.

The Colours of Flowers.—Returning home from a journey, I read the letter in your issue of November 10 (p. 375, Vol. LXXXIV), from your correspondent *H. H. Warner*, about the colours of flowers. I, too, received, through your office a copy of Ernst Benary's catalogue, with the very elaborate colour chart; this is very well done, but it does not seem to me to meet the difficulty raised by my previous letter, which is that of ordinary catalogue descriptions. If an amateur receives an English Rose, Iris or other hardy plant catalogue, he wishes a simple and clear, and as accurate as possible description of the flowers, colour. If for every Rose he should be obliged to turn to a colour chart, no matter how excellent and hunt out the exact shade of carmine—

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* *The Pear and its Culture.* By H. B. Tukey, Acting Chief in Research, New York Agricultural Experimental Station. Illustrated. pp. 125. London: Kegan Paul, Trench, Trübner and Co. Price 7s. 6d. net.

8-5 Ra, or crimson, 9 Ra—he would soon become discouraged, and his Rose order would be smaller. A Rose may have several colours, but its general colour effect is what counts. Earl of Warwick and Radiance are both pink, but one who knows that the former is a warm, yellowish, "shrimp" pink will not plant it by the cold "true" pink of the latter. For this reason, I still think that some twenty or twenty-five colour terms might be agreed upon—"primrose" yellow, "gentian" blue, "mulberry" red, etc.—to assist the average amateur who has to order from descriptions. A paper with the influence of *The Gardeners' Chronicle* could easily carry this idea into effect. *A Roman Reader.*

Apple Ribston Pippin.—I see your correspondent, *E. C. M.*, Streetly, Staffordshire, in writing of Ribston Pippin Apple, in your issue of December 15, states: "I have seen it asserted by some authority that the Ribston Pippin comes true from seeds—can anyone confirm this statement? I cannot confirm it, but rather otherwise, for two of our best dessert Apples, *i.e.*, Cox's Orange Pippin, together with Cox's Pomona—came from a Ribston Pippin, which would suggest that it does not always come true from seeds. *Howard Grace, The Gardens, Brislington House, Bristol.*

Twin-flowered Cypripediums.—In my small collection, I have had this season two plants with one stem on each, each bearing two flowers; when the first appeared I thought it so unusual that I intended writing to Messrs. Sanders on the subject, when, however, a second one came, I arrived at the conclusion that there could be nothing very peculiar about it. In my case both flowers of both plants were perfectly developed and of normal size. They are both C. insigne var. Sanderae. *J. Percy Callard, The Priory, Monken Hadley.*

Memorial to the late Mr. John Cypher.—I have followed with interest the letters that have appeared in *The Gardeners' Chronicle* re the above, also your note on p. 403, in the issue of November 24, 1928. It would appear from the latter that any sum raised should be devoted in some form to one of the gardening charities. Having known the late Mr. J. Cypher for a considerable number of years—dating back to the old summer shows that used to be held in Regent's Park—and also having had the honour of his friendship, and the pleasure of judging his fine exhibits of plants and flowers at most of the great provincial shows, I feel that his memory would be the more suitably and permanently honoured if it could be associated with plants and flowers, and more especially with groups of these subjects. It is, I think, well-known and recognised that he did more for the artistic display of plants and flowers in this particular line than any one during his long career. I venture, therefore, to suggest that the interest of any sum that may be collected be devoted to these features at our principal horticultural exhibitions, and that medals bearing his name be awarded (over and above any prizes that may be offered by a society) to ornamental groups of flowering and foliage plants at (1) the Chelsea Show, (2) the Horticultural section of the Royal Agricultural Show, (3) Southport, (4) Shrewsbury, and, if funds permitted, (5) Edinburgh, and (6) Glasgow. If the Council of the R.H.S. would kindly undertake to administer such a scheme, the machinery is at hand, and success would be assured. *N. F. Barnes, Eaton.*

Plants in Flower in Mid-November in Cornwall.—Since our removal to Cornwall, at the end of September, I have been much interested in the number of wild and cultivated plants in bloom, and the following list of those still flowering (more or less) in mid-November will give an idea of the mildness of the climate. As soon as we were straight enough to allow of a little inspection of the country near us, we were rather astonished at the plants we saw quite unexpectedly in flower. On our own plot, which was a wood until it was cleared for ours and the neighbouring bungalows, we noticed common Bugle, Wood Violets, Bramble and Wood Sage, while in the neighbourhood were Ivy-leaved Toadflax, Gorse, Great Periwinkle and Sheep's Bit (Jasione). In gardens we noticed common Marigold, Sweet Scabious, Chrysanthemums in variety, Violas, Roses, Antirrhinums, single and double Stocks, blue Lobelia, Cheiranthus Allionii, white Marguerite, Fuchsia macrostemma globosa, Michaelmas Daisies (a few, mostly white-flowered), Lemon-scented Pelargonium, Escallonia macrantha, Winter Jasmine, and Polyanthuses; of these, the Pelargonium and Lobelia were in gardens near the Cathedral at Truro, and in several other gardens in the city I saw Fatsia japonica flowering well, as was, of course, its native relative, Hedera Helix, common in the hedges and on walls and trees. Dandelions, Daisy, Potentilla reptans and other wild plants are also still flowering. Among more interesting things may be mentioned Yucca gloriosa and Sternbergia lutea, Schizostylis coccinea, Mesembryanthemum tricolorum, Veronica clethroides and Veronica "Autumn Glory," Primula Juliae and P. pulverulenta, Scabiosa caucasica, Genista fragrans, Coronilla glauca, Hydrangea hortensis; with the exception of the Genista and Veronica "Autumn Glory," both of which are fairly common about here, each of the above plants was seen only in one garden, as also were Sidalcea malvaeflora Listeri and Berberis Darwinii. A very striking Kniphofia with thick, short spikes of yellow and fiery-scarlet flowers on stems about three feet high, grows in a cottage garden near here, and I shall be glad if anyone can tell me the probable species; I may add that the spikes are rather flat-topped, and about five inches long by four inches thick. But probably the most interesting of all is a fine plant of Abutilon (probably striatum), about six feet high, in an angle of the wall of a riverside cottage at St. Clements, near here, flowering freely. I am writing this in mid-December, and most of the plants mentioned are still in flower, in spite of the gales, heavy rains and several sharp frosts we have experienced during the last few weeks. *C. Nicholson, Nansgurthick, Tresillian, Probus, Cornwall.*

Royal Horticultural Society.—I feel sure that many Fellows will have read with surprise and amazement the suggestion made by Sir William Lawrence, in your issue of December 1, 1928, that after all the money that has been spent, and all the eulogies bestowed upon it, the new hall is not proving a suitable home for the Society. Further, it is suggested that considerable sums are likely to be spent at Wisley to provide further facilities for students. I submit, that with the excellent opportunities for horticultural education which exist in this country, it is not necessary for the R.H.S. to provide a School for Horticulture at Wisley, but if the Council desires to have students there, the numbers should be kept at a minimum; the Council is not justified in spending the Fellows' money in the way suggested. If the Council "has money to burn," I suggest that it might be expended in ways much more beneficial to the Fellows and horticulture as a whole. The directions in which such expansion might be carried out are as follows:—(1) The further financing or partial financing of collecting expeditions at home and abroad for the introduction or re-introduction of plants of merit. The meaning of the latter is obvious, but I would call attention to the excellent work of Mr. Hay, whose progressive spirit might be copied. Also I should, perhaps, amplify the former slightly. There are and have been scattered up and down the country in the gardens of amateurs many rare and beautiful plants which are, and have been, lost from time to time owing to the owners dying or being forced to leave their gardens. It should be the object of the Society to obtain specimens of such, so that they might be kept in continuous cultivation. (2) The *Journal* which is so valuable to Fellows who are rarely able to go to London or Wisley, should be expanded and issued more frequently. (3) Several gardens of small extent, which could be worked by one or two men on the lines of the alpine gardens in Switzerland, etc., should be established in different parts of the country so that plants which do not succeed in Wisley could be grown elsewhere, and new plants could be tried under as many different conditions as possible, and reported upon. (4) The distribution of plants should be enlarged and improved upon as being a distinct encouragement to horticulture, and not regarded as merely a means of getting rid of the Wisley surplus, *vide* 1927 report "as the garden becomes fully planted, the numbers available may be diminished." These suggestions are made here because so many Fellows who live away from London have no other means of expressing their approval or disapproval of the actions of the Council, but at the same time are not intended to belittle the work of the Council as shown by the wonderful progress which the Society has made in recent years, and also in the hope that Sir William was "flying a kite" with the object of obtaining the opinions of other Fellows. *E. B. Anderson, Hemyock, Devon.*

Record Potato Crops.—Referring to the note in your paper (Vol. LXXXIV, p. 381), regarding the above and stating that Mr. A. G. Adams had raised 835 lbs. of Potatos from 1lb. of seed, I do not understand how Mr. Adams was able to cut 1lb. weight of Potatos into 146 pieces, each with an eye. At the most, he would have to cut this number of eyes out of eight Potatos, and these would not be very large either, at an average of two ounces each. Was this weight produced in a competition and checked by any one as a Committee, in the same way as the competition is worked at Gainsborough, where the weight raised was 492 lbs. this year. At Gainsborough, the sets are obtained by the Committee, and no one knows what the variety is until a considerable time after the seed sets have been planted in the presence of a representative from the Committee, and who also attends when the Potatos are lifted, and checks each grower's produce on the spot. A limit of thirty pieces is fixed. You ask if anyone can beat the record, viz., 835 lbs. According to a note in Mr. T. W. Sanders' *Book of the Potato*, 1 lb. of Eldorado yielded 43 cwts., and also that in 1875, a Kentish gardener raised 647 lbs. of tubers from 1 lb. of cut tubers of the variety Eureka, but it does not state under what conditions these weights were obtained, and it is assumed that, at any rate in the case of Eldorado, they were obtained by cuttings from the tops. *H. Fawcett, Grimsby.*

FRUIT GARDEN.

PEAR CATILLAC.

If one were curtailed in the choice of a culinary Pear to a single variety, I venture to suggest that confidence would not be misplaced if Catillac was decided upon, for it is one of the best Pears for that purpose. According to Messrs. Bunyard's catalogue, it is of great antiquity, having been known before 1665.

The fruits are very large, roundish in shape, of a dull green colour turning to a yellowish-green after storing, with a brownish-red flush on the exposed side, which is more pronounced where the fruit has been in full sun. Its season is from December to April. When stewed the flesh may best be described as a deep pink, firm and of an excellent flavour.

The variety is a strong grower, succeeding as a standard or on north and east walls. It is fertile, has rather distinguished foliage of a very pale green colour, and is a regular cropper.

RASPBERRY HAILSHAM.

Raspberry Hailsham, or the Hailshamberry, was raised at Hailsham (Sussex) by Mr. Dann and is one of our finest autumn-fruiting Raspberries, producing fruits well into November during an "open" season. We gathered a small dish here so late as November 13.

It is a vigorous grower, provided it receives the correct cultural treatment, *i.e.*, cutting it to the ground in the spring, and I should like to emphasise this, for last year, as an experiment, we left the previous year's canes on a percentage of the plantation, and the result was neither profitable nor gratifying, except as an experience.

The fruit is very large, round, and of a rich crimson colour. The flavour is excellent and the foliage large and handsome, thoroughly protecting the fruits. *T. Wilson, Moreton Paddox Gardens, Warwick.*

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

AT the meeting held on Friday, December 14, 1928, the members of Committee present were Messrs. H. Astley Bell (in the chair), J. B. Adamson, A. Burns, B. Collins, A. Coningsby, D. A. Cowan, J. Evans, A. Keeling, D. McLeod, W. J. Morgan and H. Arthur (Secretary).

FIRST CLASS CERTIFICATES.

Brasso-Cattleya British Queen var. Renown. A large flower of good form and even colour, the fringed lip having a band of white, the throat being yellow. *Oncidium Boissyeana* (*varicosum Rogersi* × *Forbesii*). A large flower of the varicosum type, bright yellow, the inner segments being barred with chocolate-brown. Both from J. B. ADAMSON, Esq.

AWARDS OF MERIT.

Cypripedium Anita var. exquisita; *C. Alpha var. magnifica*; and *Odontioda Enterprise* (*parentage unknown*), from J. B. Adamson, Esq.

Cymbidium Matador (*Tracyanum* × *Schlegelii, Fowler's var.*), and *Cypripedium Queen Mab var. Ariel.* From Mrs. BRUCE and Miss WRIGLEY.

Cymbidium Doris var. maculatum, from the Hon. G. E. VESTEY; and *Vanda coerulea gigantea*, from Mr. JOHN EVANS.

READING AND DISTRICT GARDENERS'.

THE final fortnightly meeting of the autumn session was held in the Abbey Hall on December 17, 1928, when there was a large attendance, presided over by Mr. H. Reeves. A lecture entitled "Vegetables for Exhibition," was given by Mr. A. W. Gower, The Gardens, Calcot Grange, a well-known and most successful exhibitor of vegetables. In his opening remarks, he stated that his subject was a very wide one and therefore he could only deal with those kinds which are essential and necessary for a competitive collection of vegetables of nine kinds and which are given eight or seven points in the Royal Horticultural Society's *Code of Rules for Judging*. In the growing of vegetables for exhibition the chief essential is the preparation of the soil, which Mr. Gower dealt with very fully, also seed sowing, transplanting, and feeding. The vegetables dealt with were Onions, Leeks, Celery, Carrots, Cauliflowers, Potatos, Peas, Tomatos (eight points) and Runner Beans (seven points). In conclusion, suggestions were given as to the arrangement of collections and the preparations of the various specimens.

There was very keen competition in a class for three dishes of Potatos, the tubers being firm and of excellent colour for so late in the season. There were ten entries, and the first prize was awarded to Mr. E. BLACKWELL, The Gardens, Foxhill, Reading; second, Mr. A. H. FULKER, The Gardens, Elmhurst, Reading; third, Mr. A. E. KIRBY, Amity Road, Reading. In the non-competitive section, Mr. E. BLACKWELL received an Award of Merit for three vases of large Japanese Chrysanthemum blooms, while Mr. F. TURNER, Southview, Calcot, showed some good blooms of the yellow form of Chrysanthemum Madame Oberthur.

PROFESSIONAL GARDENERS'.

AT the meeting of this Association, held at the Victoria Hotel, Leeds, early in December, Mr. J. T. McCormack, who occupied the chair, reported the formation of a vigorous new branch at Harrogate, with about twenty members. Propaganda is going on in several other centres and much progress is being made. A number of new members were enrolled, and much business of importance was discussed, after which Mr. T. Hooker delivered a lecture on "Orchids."

Mr. T. Hooker, who has had several valuable collections under his care, is a recognised authority on the cultivation of all classes and genera of the Orchid family, and gave a highly interesting and instructive address, dealing principally with Cattleyas, Cypripediums, Dendrobiums and Odontoglossums. He also touched briefly on many other sorts, and an interesting and helpful discussion ensued, Mr. Hooker answering many questions and imparting much sound advice.

Obituary.

Lord Lambourne.—One of the best known and most popular of personages has passed away at the advanced age of eighty-one years—Lord Lambourne. As a Guardsman he was ever a favourite, and the robust good humour that won him so many friends in his earlier years served him well in later life. When, as Colonel Mark Lockwood, he sat in the House of Commons, his fellow members were always delighted to hear him. His witticisms and smiles often saved a delicate situation when cogent arguments were unavailing. Lord Lambourne was a great lover of animals and of gardening, and for these objects of his affection he was always ready to work and use his great influence. For many years he was Vice-President of the Royal Society for the Prevention of Cruelty to Animals, and from 1917 to his death he was President of the Royal Horticultural Society, a position of which he was unfeignedly proud. Although never a great gardener, Lord Lambourne became a great personality in the horticultural world—a personality that could neither be avoided nor ignored. It was his delight to escort the King and Queen through the great Chelsea Shows, and his jokes would bring laughter to the Royal party; but, equally, a nurseryman's assistant would receive the same old-fashioned courtesy and be set at ease by some witticism or quaint observation. He was greatly loved by the members of the R.H.S. Council, and, indeed, by all Fellows of the Society, exhibitors and pressmen. There may have been greater Presidents of the Royal Horticultural Society, but none more liked and loved. He was get-at-able by all, and hail-fellow-well-met to peer and peasant, gardener and king. And yet, through all his jollity of manner, Lord Lambourne preserved that touch of autocracy so long associated with "baron and squire and knight of the shire." For some time past he had been in failing health, consequently during the past year or so his breezy open-airness suffered a partial eclipse, and he was at one time afraid he might not be able to lay the foundation stone of the New Hall; fortunately, this pleasure was not denied him, and when he escorted Princess Mary to the dais on the occasion of the opening of the hall, he did so with a gladness that showed how greatly he had set his heart upon attending this notable function in the history of the Royal Horticultural Society. He was doubtful as to the wisdom of building the new hall, but after the Council had decided upon the scheme Lord Lambourne never faltered in his loyalty to the Council over which he presided so ably and genially. In his garden at Bishop's Hall, Romford, Lord Lambourne loved to grow both old-fashioned and uncommon plants, proof that his affection for the conditions of his early years was not an obsession; indeed, in many ways Lord Lambourne continued youthful, and every novelty in plant and flower received his due consideration. He maintained his old-fashioned love for a "button-hole" to the last, but whereas he was wont to wear a full-sized Carnation, he had, since the death of his wife, worn only a sprig of Myrtle. In Masonic circles Lord Lambourne held the high position of Provincial Grand Master of Essex, and he took a great interest in various Masonic charities. His chief business association was with the London and North Western Railway, of which he became a Director many years ago, long before its incorporation with the L.M.S.

THE LATE LORD LAMBOURNE.

The funeral service took place at Lambourne Church, on Monday last, the Bishops of Chelmsford and Barking officiating. The body was borne from Bishop's Hall to the Church on an estate farm wagon, and men of the Coldstream Guards acted as pall bearers. The attendance was very large, and in addition to the family mourners, included many notable people representing the House of Lords, the House of Commons, the County of Essex, Freemasonry, and various Societies. Horticulture was represented by Mr. C. T. Musgrave, Mr. George Monro, Mr. G. W. E. Loder and Mr. F. R. Durham from the Royal Horticultural Society; and Mr. Courtney Page from the National Rose Society. Those who attended to pay tribute to the regard in which Lord Lambourne was held, were so numerous that the majority could not gain admittance to the Church, consequently the Bishop of Chelmsford gave his address at the graveside. Floral tributes were many and beautiful, and included one of red Carnations from Her Majesty Queen Mary. Memorial services were held at St. Margaret's, Westminster, at Chelmsford Cathedral, and at St. Nicholas's Church, Chelmsford. At the service at St. Margaret's, the King was represented by Viscount Gage; the Prince of Wales by Sir Godfrey Thomas; and the Duke of Connaught by Lt.-Col. Sir Malcolm Murray. Horticulture was also represented at the service by Sir William Lawrence, Sir Jeremiah Colman, Sir David and Lady Prain, Mr. Gerald Loder, Dr. A. W. Hill, Mr. T. Hay, Mr. Mark Fenwick, Mr. E. A. Bowles, Mr. Scrase Dickens, Mr. R. W. Wallace, Mr. Noel Sutton, Mr. H. H. Thomas, Mr. W. B. Cranfield, Mr. F. J. Chittenden, Surgeon Lt.-Com. A. T. Dalby and Mr. A. Simmonds. Out of respect to their late President, the Council of the R.H.S. abandoned the exhibition fixed for January 1.

I have been disturbed to find in the daily press a tendency to treat Lord Lambourne's life as a joke. He was a very wise man, and his notable characteristic was that he invariably played the game and expected others to do the same. Wire-pulling he abominated, and was the kindest and most hospitable of friends. He had no use for the professional politician and for men who disputed the decision of the judges in agriculture, horticulture and elsewhere. An ardent lover of the good old times he was at first doubtful about the success of the New Hall; when it was completed he admired the interior, while frankly disliking the exterior, of which, however, his Christmas card this year showed a view. He was in no sense an "expert" horticulturist, as the daily press avers, but just as he had an eye for a good horse or a fine *objet d'art*, he knew a good florist's flower. Although in the later years he became interested in a few conspicuous species, such as Rhododendron and Magnolia, the richly-coloured garden forms of flowers appealed most to him. Many fine garden plants have been named after him, Carnation, Oriental Poppy and Dahlia. He told me that he thought the Dahlia Society's Show was the finest display of colour he had ever seen, while the late Sir George Holford's Hippeastrums always won his ardent admiration. With his two big houses he was a very lonely man after the death of his wife and he would spend much time reading memoirs in French—he lived two years as a young man at Angers—and English. The tender care shown him by Miss Lawrence was a great comfort to him. Miss Lawrence is a keen gardener, and the tradition of Bishop's Hall will be kept alive by those two fine Dahlias—Mabel Lawrence and Lord Lambourne. *W. L.*

Ernest Horton.—It is with the deepest regret that we record the death of Mr. Ernest Horton. Although his friends knew his malady to be hopeless, the news of his death on December 14 last was in the nature of a shock, for until quite recently Mr. Horton had been busily engaged on his many affairs, full of his accustomed energy and enthusiasm. It is no hackneyed phrase to state that horticulture is the poorer for his passing. It is one of the paradoxes of life that while the results of his work were well-known to a vast multitude of gardeners of all classes, comparatively few, outside trade circles, knew Mr. Horton even by name. But the trade and his other friends well knew that Ernest Horton was the soul and driving force of the enterprising firm of Messrs. Bees, Ltd. His earlier gardening experience was obtained in various private gardens in the north, and he went to Kew from Croxteth Hall, Lancashire, in 1899, becoming seed-collector the following year. Then, feeling that in the commercial side of horticulture lay his real work, he found employment with such well-known firms as Messrs. James Veitch and Sons, Messrs. Backhouse and Sons, and Messrs. Clibrans, Ltd. He joined the staff of Messrs. Bees, Ltd., when that firm was started, as assistant manager, and in due course became general manager. In some circles he was, perhaps, looked upon as the stormy petrel of the horticultural trade, but this impression was created rather by his impetuous and go-ahead nature. He was always doing things and wished others likewise to do things, particularly for the benefit of the trade he had so much at heart. He rightly had an intense belief in the power and value of advertising, and endeavoured to imbue others with his enthusiasm. Not only was Mr. Horton a successful business man, he was a facile and forceful writer, and his colour photographs reached a high standard of merit. While his business affairs often took him fairly far afield, it was at home that Mr. Horton found his greatest pleasure, for he was essentially a family man. He has left a widow, three sons and two daughters, to whom we offer our most sincere sympathy and condolences.

Francois de Laet.—We regret to learn of the death, on December 25 last, of Francois de Laet, the well-known Cactus specialist, of Contich, near Antwerp. M. de Laet was born at Contich on October 7, 1866. He has left two sons, his wife having pre-deceased him. Better-known on the Continent, where Cactus growing is more the vogue than in this country, his reputation was, nevertheless, world-wide, and horticulture is the poorer for his death.

M. Pernet-Ducher.—We regret to learn from the French horticultural press of the recent death of M. Pernet-Ducher, the great French Rose-grower, who gave to the world the race of Roses known as Pernetiana. The first of this race, known as Soleil d'Or, was raised in 1900, and was said to be a cross between Persian Yellow and a variety named Antoine Ducher. Soleil d'Or is now seldom grown, but its production had the effect of infusing fresh blood into garden Roses, and was responsible for enlarging very greatly the range of Rose-colourings. In 1908, M. Pernet-Ducher produced The Lyon Rose, which was a cross between Persian Yellow (through Soleil d'Or) and the best of the Hybrid Teas, and marked a considerable step forward. Working on the same lines with ever-growing success, M. Pernet-Ducher produced in 1910 the well-known Rayon d'Or, and a year or two afterwards the ever-popular Madame Edouard Herriot, named after the wife of the Mayor of Lyons, where the famous Rose nurseries are situated. M. Pernet-Ducher retired from active business some years ago, but continued to take a keen interest in the subject of his life's work. Few horticulturists can have accomplished, in a single life-time, so much pioneer work on a single race as M. Pernet-Ducher achieved in the realm of Roses, and it is fitting that his name should be enshrined in the name of the new race with which he has endowed Rose-lovers all over the world.

ANSWERS TO CORRESPONDENTS.

Arbutus Failing.—*A. J.* The Arbutus leaves are free from fungus disease. Some bacteria are present in the blackened areas, but are probably saprophytic. The damage is due to some physiological factor, and may be the result of spray damage. Arbutus prefer a well-drained, rich compost and it will be advisable to see that the plants are provided with such. It is recommended that a mulch of well-decayed leaf-mould and some farmyard manure be given to the plants now, and a dressing of sulphate of potash applied in spring.

Begonia Leaves Discoloured.—*A. C.* We have examined the Begonia leaves and find no trace of disease to account for their discoloration, consequently, we consider the injury must be due to some adverse cultural condition, probably to drops of very cold water falling upon them.

Begonias and Cyclamens Infested.—*P. J. B.* The foliage you sent us was badly infested with Begonia mite, which may be eradicated by dipping the plants in, or spraying them with, a Nicotine solution.

Celery Damaged.—*H. T.* The damage to the Celery is probably due to millipedes. Remedial measures include (1) trapping by means of hollowed-out Mangolds or Beetroots placed beneath the soil, and examining them every other day during the time the crop is in the ground; (2) dressing the ground with commercial naphthalene (two to three ounces to the square yard)—better results will follow if this material is watered in or applied prior to rain; and (3) a heavy dressing of lime to the soil during digging operations.

Chrysanthemum Unhealthy.—*J. M. S.* The Chrysanthemum shoots are not attacked by any fungus disease. There may be trouble, however, at the base of the plant. The condition of the flowers suggests unhealthy root action, or may be due to the plant having experienced cold draughts of air, or water dripping from the roof of the house.

Delphiniums.—*V. T.* Five good and cheap varieties are Persimmon, Rev. E. Lascelles, Mrs. Creighton, King of Delphiniums and Duke of Connaught. Five more expensive varieties are Sir Douglas Haig, Harry Smetham, Mrs. W. Wells, Lizzie van Veen and Millicent Blackmore.

Fallen Timber.—*T. R.* In the absence of express agreement to the contrary, windfalls of sound timber belong to the landlord, but windfalls of trees which are not timber and of decayed timber trees belong to the tenant. Your case, however, is governed by the express clause in the lease, and if the fallen trees are timber, they are the property of the landlord.

Gardener's Wages During Illness.—*X. Y.* A gardener receiving relief from the State Insurance scheme cannot claim wages from his employer, but it is usual for the employer to make up the difference between the State allowance and the wages.

Glassiness in Apples.—*W. L.* The Apples are affected with the physiological trouble known as "glassiness," which is caused by the cells of the flesh near the skin becoming overcharged with water. There is no known cure for the trouble, and it rarely happens that many fruits on a tree are so affected.

Irises and Chrysanthemums.—*V. T.* A few varieties of Iris in yellow and reddish shades are Prosper Laugier, Princess Victoria Louise, Pelopidas, Porsenna, Mrs. Nandy Hoskins, Medrano, Maori King, Mrs. King, Helvetia, Ed. Michel, Caprice and Anoba. A selection of Chrysanthemums for your purpose should include: Pale pink—Jacky, Pink Delight and Uxbridge Pink; Yellow—Knaresborough Yellow, Mayford Yellow and Daffodil; Red—Crimson Circle, Red Almirante and Red Ensign; Brown—Mrs. Jack Pearson, Almirante and Harvest Glory; Maroon—Minstrel and Dick Barnes; Mauve—Mrs. James Scalley, Silver Queen and Dolly Reeves; Cream—Cranford Cream, Perle Chatillonaise; Early-flowering Singles—Donald Wells, Doreen Woolman and Richard Holding.

Licence for Gardener.—*G. W.* If the gardener is in the sole employ of the employer, a licence is necessary under the Inland Revenue Act, 1869.

Lichen on Apple Trees.—*L. B.* Your best course will be to spray your trees with one of the winter washes, so as to cleanse the twigs and branches from lichen and moss. The work should be done before the end of January.

Names of Fruits.—*H. W. R.* 1, Alfriston; 2, Harvey's Wiltshire Defiance; 3, Adams's Pearmain; 4, Old Hawthornden; 5, Beauty of Kent; 6, Lord Burghley; 7, Court of Wick.—*T. H.* 1, Claygate Pearmain; 2, Alfriston; 3, Pear Winter Nelis.—*V. E. W.* 1, Newton Wonder; 2, Aromatic Nonpareil; 3, Smart's Prince Arthur; 4, Radford Beauty.—*G. B.* 1, Beaumann's Reinnette; 2, French Paradise.—*A. L.* Easter Orange.

Names of Plants.—*A. S. B.* Pyrus Aria—*J. G. St. L.* 1, 2, 3 and 4, Skimmia japonica, male and female forms; 5, Iberis sempervirens Garrexianum; 6, Betonica spicata variegata; 7, Euonymus japonica variegata; 8, Jasminum officinalis; 9, not recognised; 10, Corydalis lutea; 11, Sedum sp., send in flower; 12, Veronica speciosa. *W. L.* 1, Photinia serrulata; 2, Euonymus radicans var. variegata; 3, Euonymus Sieboldianus.—*F. J. T.* Albizzia lophantha. *H. W. A.* Datura Stramonium.

Sowing Azalea japonica Seeds.—*V. T.* According to their quantity, you may sow the seeds in pots, pans or seed-boxes, using a compost of fine sandy peat made moderately firm. It is best to water the soil in the seed pots with a fine-rosed watering-can a few hours before sowing the seeds. The fine seeds should be evenly distributed over the surface and should be covered with a sprinkling of sand. Stand the pots in an ordinary greenhouse, cover with a piece of glass, and give shade until germination takes place.

Woolly Aphis on Apple Trees.—*F. W.* We have no experience of the use of carbide of calcium inserted in the ground as a cure for woolly aphis on the roots of Apple trees; but bi-sulphide of carbon is used in that way, as it is very volatile and inflammable, it should be used quickly and carefully.

Communications Received.—A. G. T.—A. G.—R. W. T.—A. J. C.—A. W.—B. C.—E. B.—W. L.—R. B.—F. J.—R. E. A.—E. D.—G. I. T.—R. C. P.—T. B.

MARKETS.

COVENT GARDEN, Tuesday, January 1, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum, per doz. ...	10 0–12 0
—elegans ...	10 0–12 0
Aralia Sieboldi	8 0—9 0
Araucarias, per doz.... ...	30 0–40 0
Asparagus plumosus ...	12 0–18 0
—Sprengeri ...	12 0–18 0
Aspidistras, green ...	16 0–60 0
Aspleniums, doz.	12 0–18 0
—32's	24 0–30 0
—nidus ...	12 0–15 0
Cacti, per tray, 12's, 15's ...	5 0—7 0
Chrysanthemums,	
—white, per doz.	18 0–24 0
—yellow „ ...	18 0–20 0
—pink „ ...	21 0–24 0
Crotons, per doz.	30 0–45 0
Cyclamens, per doz.... ...	24 0–36 0

	s. d. s. d.
Cyrtomiums ...	10 0–12 0
Erica gracilis, per doz. ...	24 0–30 0
— — 60's, per doz.... ...	12 0–15 0
— — 72's, per doz.... ...	6 0—8 0
— — hyemalis, per doz. ...	24 0–30 0
—nivalis, per doz.... ...	24 0–36 0
— — 60's, per doz.... ...	12 0–15 0
— — 72's, per doz....	6 0—8 0
Nephrolepis in variety ...	12 0–18 0
—32's	24 0–36 0
Palms, Kentia	30 0–48 0
—60's	15 0–18 0
Pteris in variety	10 0–15 0
—large, 60's ...	5 0—6 0
—small... ...	4 0—5 0
—72's, per tray of 15 ...	2 6—3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	18 0–21 0
—cuneatum, per doz. bun. ...	12 0–15 0
Anemone, St. Brigid, per doz.	6 0—9 0
Arums (Richardias), per doz. blooms ...	6 0—8 0
Asparagus, plumosus, per bun., long trails ...	2 6—3 0
—med. sprays	2 0—2 6
—short „ ...	— 1 0
—Sprengeri, bun. long sprays...	2 0—2 6
—med. „ ...	1 0—1 6
—short „ ...	0 6—1 9
Camellias, white, per doz. blooms	2 0—2 6
Carnations, per doz. blooms	3 0—5 0
Chrysanthemums—	
—red, per doz. bunches ...	30 0–36 0
—white, per doz. blooms ...	3 6—9 0
—yellow, per doz. blooms ...	5 0—8 0
—bronze, per doz. blooms ...	4 6—7 0
—pink, per doz. blooms ...	4 0—7 0
—pink, per doz. bunches ...	30 0–36 0
Croton leaves, per doz. ...	1 9–2 6
Daffodils, single, doz. blooms...	2 0—2 6
Fern, French, per doz. bun.	10 0–12 0
Forget-me-nots, per doz. bun.	12 0–15 0
Freesia, white, per doz. bun.	3 6 4 0
Heather, white, per doz. bun.	9 0–12 0
Hyacinth, Roman, on bulbs, per doz.... ...	4 0—5 0
— — 6's, per doz. bun. ...	4 0—5 0
Iris tingitana, per doz. blooms	5 0—6 0
Lilac, white, per doz. sprays ...	6 0–10 0
—mauve, per doz. sprays ...	9 0–10 0

	s. d. s. d.
Lily-of-the-Valley, per doz. bun.	18 0–30 0
Lilium longiflorum, long, per bun.	4 6—5 6
— — short. per doz. blooms	5 0—6 0
—speciosum rubrum, long, per doz. ...	5 6—6 0
— — — short, per doz. ...	3 0—3 6
Marigolds, per doz. bun. ...	5 0—6 0
Myrtle, green, per doz. bun.	1 6—2 6
Narcissus, Paper White, per doz. bun.... ...	9 0–12 0
Orchids per doz.	
—Cattleyas ...	18 0–30 0
—Cypripediums	8 0–12 0
Prunus triloba, per bunch ...	4 0—5 0
Roses, per doz. blooms—	
—Mme. Butterfly	12 0–15 0
—Columbia ...	15 0–18 0
—Richmond ...	12 0–15 0
—Roselandia ...	12 0–12 0
Smilax, per doz. trails ...	4 6—5 0
Tulips, per doz. bun—	
—white ...	24 0–30 0
—yellow ...	24 0–30 0
—red	18 0–27 0
—pink... ...	24 0–30 0
—terra-cotta ...	24 0–30 0
—mauve ...	48 0–60 0
Violets, Prince of Wales, per doz. bun.... ...	4 0—6 0
French Flowers—	
—Acacia (Mimosa), per doz. bun.	12 0–15 0
—Marigolds, per pad	8 0—9 0
—Narcissus, Paper White, per doz. bun.	4 0—4 6
Soliel d'Or, per doz. bun. ...	4 0—5 0
—Roses, Safrano, per pkt. 24's	3 0—3 6
—Violets, Parma, large, per bun.	8 0–10 0

REMARKS.—Chrysanthemums are gradually decreasing in quantity, although spray and disbudded blooms of white sorts are still sufficient to meet present requirements. Supplies of coloured varieties are somewhat shorter, but some good yellow and bronze blooms are still on sale. Negoya and Winter Cheer are the best lines in spray Chrysanthemums. Carnations have returned to a more nominal figure, while Roses are insufficient in spite of the high prices. Arums (Richardias) are also on the down grade. Lilium longiflorum supplies are short. Daffodils are on the increase and much finer in quality, as also are Tulips, which now include some very fine blooms of William Copland, King of the Yellows, Yellow Prince, Thomas Moore, La Reine and Brilliant. More Iris tingitana blooms have been greatly welcomed, together with white Freesias and white and yellow Narcissi from the Channel Islands. Single Violets have been very limited in quantity for some days past. White and mauve Lilac and Prunus triloba are of improved quality—the best received this season. Small consignments of Tulips and Lily-of-the-Valley are now arriving from Holland. In the French department, Anemones, Ranunculus, white and yellow Narcissi, Marguerites. Marigolds and single Violets, also a few bunches of Parma Violets, are the most prominent lines.

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Cox's Orange Pippin, ½-bush.	20 0–22 6
—Bramley's Seedling	12 0–14 0
—Newtown Pippin, per case	11 0–14 0
—American—Jonathan ...	10 0–12 0
—Spitzbergen...	9 0–10 6
—Nova Scotian—	
—Ben Davis ...	22 0–25 0
—Starks ...	26 0–30 0
—Golden Russet	26 0–30 6
—Baldwin ...	22 0–28 0
—Wellington ...	28 0–32 0
Bananas, per bun.... ...	22 6–35 0
Dates, dry, in cartons ...	5 0—6 0
Grapes, English—	
—Alicante ...	1 6—3 0
—Gros Colmar	1 9—3 6
Grapes, Almeria, per barrel ...	16 0–26 0

	s. d. s. d.
Grape Fruits—	
—Honduras ...	— 18 0
—Jamaica ...	— 15 0
—Florida ...	— 25 0
—Dominica ...	— 14 0
Lemons, per case—	
—Messina ...	13 0–30 0
Nuts—	
—Brazil, cwt....	— 90 0
—Chestnuts, Italian, bag	10 0–15 0
— — French „	6 0–10 0
Oranges—	
—Jaffa ...	20 0–21 0
—Murcia ...	14 0–20 0
—Denia ...	14 0–30 0
Pears. English—	
—Doyenné du Comice, trays, special, per doz.... ...	5 0—8 0
—American—	
—Washington Anjou ...	20 0–22 6
—Winter Nelis	15 0–16 0
—Californian Doyenné du Comice, case	25 0–30 0
Pineapples, case	20 0–35 0

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus, English	5 0–12 0
—French Paris Green...	10 0–12 0
—National ...	14 0–18 0
—Sprue ...	1 6—2 0
Beans—	
—Guernsey, per lb.	1 6—5 0
—Madeira ...	5 0—6 0
Beet, per bag...	5 0—6 0
Brussels Sprouts, ½-bag ...	2 6—3 0
Cabbage, per doz.... ...	0 9—1 3
Carrots, ½-bag ½	2 3—2 6
Cauliflowers, English—	
—Cornish, crates, 18's, 24's ...	8 0–10 0
Kent, 15's ...	4 0—5 0
—French—	
St. Malo ...	6 0—8 0
Celery, washed, per doz ...	16 0–21 0
Chicory, Belgian	0 4—0 5
Cucumbers, doz.	16 0–24 0
Lettuce, Cabbage	
—French, indoor, 48's	6 0—8 0
— — outdoor...	7 0—9 0

	s. d. s. d.
Mint, per doz. bun.... ...	6 0—8 0
Mushrooms—	
—cups, per lb.	2 0—3 0
—broilers „ ...	1 6—2 0
Parsnips, cwt....	6 0—7 0
Peas, hothouse, per lb. ...	5 0—6 0
Potatos—	
—English, cwt.	3 0—7 0
—Azores, new per case ...	10 0–18 0
—new hothouse, per lb.	1 0—1 6
—Canary Island	10 0–12 0
Rhubarb, forced, per coz. ...	2 0—2 9
Savoys, per doz.	1 6—2 0
Seakale, punnet	2 0—2 6
—Canary Island, per bundle ...	12 0–14 0

REMARKS.—There has been an average amount of business transacted for the time of year, the week following the Christmas holiday being always on the quiet side. Moderately large supplies of hothouse Grapes have been available, and in response to an active demand from Scotland for the New Year celebrations, values have been maintained well. The Apple market is quiet and prices all round are inclined to be lower. A few English Cox's Orange Pippins are selling well, and this variety will probably continue popular while the fruits arrive in good condition. There has been a slakening in the trade for Pears, and both English and imported Doyenné du Comice being offered at lower prices. The early part of this week has seen a keen demand for Asparagus, but it is likely that prices will be easier later. The earliest shipments of fruits from South Africa are now arriving, this week's consignment consisting chiefly of Peaches, Apricots and Plums.

The trade for forced Peas, Beans and Potatos is moderate at the comparatively high prices that are ruling. Salads, mainly from France, are selling well, Lettuce in particular being rather expensive. Mushrooms have improved somewhat in price since the week-end, and the position in that section is now more stable. Forced Rhubarb is arriving and selling fairly well. The old Potato trade is steady

GLASGOW.

Owing to the Christmas holidays in the south, cut flowers were scarce during the past week and prices displayed an irregular tendency. Chrysanthemums, which are nearing the end of the season, depreciated both in quality and quantity, with the result that top grades commanded high values. Ordinary quality sold as follows: Balcombe Beauty and Favourite, 1s. 6d. to 2s. 6d. for 6's; Tuxedo, 1s. 6d. to 2s.; Jean Pattison, 1s. 6d. to 1s. 9d.; Sunshine, 1s. 3d. to 1s. 6d.; and Winter Cheer, Wilcox and Baldock's Crimson, 1s. to 1s. 6d. Hyacinths were worth from 9d. to 1s. 6d for 3's; Golden Spur Daffodils, 1s. 3d. to 2s. for 6's; Thomas Moore and Montressor Tulips, 9d. to 1s., and William Copeland, 1s. 6d. to 2s.; Carnations, 6s. to 10s. per dozen; Roses, 6s. to 8s.; Richardias, 6s. to 7s. per bunch; Lily-of-the-Valley, 2s. to 2s. 6d.; Narcissus, 2s. 6d. to 4s. per dozen bunches; Mimosa, 12s. per cane; and Smilax, 1s. to 2s. per bunch.

The end of the year imports of fruits were heavy, and as the demand was keen, prices advanced appreciably. Apples were in good condition and met with a ready sale at the following values:—Jonathan, extra fancy, 11s. to 11s. 6d. per case; fancy, 9s. 6d. to 10s. 6d.; Delicious, extra fancy, 13s. to 13s. 6d.; fancy, 12s. to 12s. 3d.; Spitz, extra fancy, 10s. 6d. to 11s.; fancy, 9s. 6d. to 9s. 9d.; Newtowns, extra fancy, 13s. 6d. to 15s.; fancy, 12s. 6d. to 14s.; York Imperial, 26s. to 27s. per barrel; Winesap, 32s. to 34s.; Albemarle Pippin, 45s. to 50s.; Greening, 34s. to 35s.; and Stayman, 23s. 6d. to 30s. Winter Nelis Pears were worth 18s. 6d. to 21s. 6d. per case for Oregon and Californian fruits, and 13s. 6d. to 17s. for Washington. Jaffa Oranges sold at 15s. to 15s. 6d. for 120's; 16s. to 17s. for 144's; 16s. 6d. for 180's; 16s. to 16s. 6d. for 240's; Murcia, 16s. 6d. to 20s. for 240's; 17s. 6d. to 20s. for 300's 15s. 6d. to 17s. for 360's; 17s. to 19s. 6d. for 504's ordinary; Valencia, large, 27s. to 40s. 27s. 6d. to 32s. 6d. for 714's; 15s. to 20s. 6d. for 200's and 240's; 15s. 6d. to 18s. 6d. for 300's; 15s. to 16s. for 360's 15s. 6d. to 16s. 6d. for 504's. Mandarin were worth 1s. 6d. to 2s. per tray. Hothouse Grapes made 2s. 6d. to 3s. 6d. per lb. for black, and 5s. 6d. to 6s. 6d. for Muscats. Lemons, 18s. per case of 300.

Vegetables were scarce, Cauliflowers selling at 5s. 6d per dozen, and Mushrooms, 2s. 6d. per lb.

GARDENING APPOINTMENTS.

Mr. J. Harvey for the past thirty years gardener at Frampton Court, Dorchester, as gardener to Field-Marshal LORD METHUEN, Corsham, Chippenham, Wiltshire.

Mr. William Molyneux, previously foreman at Edenhurst, Sevenoaks, at Tranby Croft, Hull, and Everlands, Sevenoaks, and recently gardener to Major LAMBARD, Bradbourne Hall, Sevenoaks, as Gardener to Sir CHARLES OAKLEY, Bart., Frittenden House, Staplehurst, Kent. (Thanks for 2/6 for R.G.O.F. Box.—EDS.)

Mr. H. Wilson, for the past fourteen years gardener to ISAAC SMITH, Esq., late of Hazlewood, Silverdale, Lancashire, as gardener to the UNIVERSITY OF CAPE TOWN, Groot Schuur, Dondebosch, Cape Town, as from May, 1929. (Thanks for 2s. 6d. for the R.G.O.F. Box.—EDS.).

Mr. E. Humphries has been appointed to succeed Mr. S. Brown as gardener to RICHARD CARTWRIGHT, Esq., Aynho Park, Banbury.

Mr. S. Bowler, pleasure ground foreman at Ford Manor Gardens, has been appointed gardener to Mrs. CAMBELL BANNERMAN, Hanton Court, Maidstone.

CATALOGUES RECEIVED.

SALE AND SON, LTD., Wokingham.—Flower and Vegetable Seeds.

LITTLE AND BALLANTYNE, LTD., Carlisle.—Flower and Vegetable Seeds.

HURST AND SON, London, E.1.—Flower and Vegetable Seeds.

BARR AND SONS, 11, 12 and 13, King Street, Covent Garden. W.C.—Flower and Vegetable Seeds.

ROBERT VEITCH AND SON, LTD., Exeter.—Hardy Trees; Shrubs, etc.; Vegetable and Flower Seeds.

J. C. WHEELER AND SON, LTD., Gloucester.—Flower and Vegetable Seeds.

W. DRUMMOND AND SONS, LTD., Stirling.—Flower and Vegetable Seeds.

D. G. PURDIE, 6, Waterloo Street, Glasgow, C.2.—Seed Potatos.

AUSTIN AND MCASLAN, 91 to 95, Mitchell Street, Glasgow.—Flower and Vegetable Seeds.

STUART LOW AND CO., Royal Nurseries, Bush Hill Park, Enfield, Middlesex.—Plants.

ALEX. DICKSON AND SONS, LTD., Hawlmark, Belfast.—Flower and Vegetable Seeds.

DOBBIE AND CO., LTD., Edinburgh.—Flower and Vegetable Seeds.

FOREIGN.

ERNST BENARY, Erfurt, Germany. Flower and Vegetable Seeds.

THE

Gardeners' Chronicle

No. 2194.—*SATURDAY, JANUARY* 12, 1929.

CONTENTS.

Alpine garden—
  Margyricarpus setosus 28
  Scabiosa Pterocephala 28
Crawfurdia trinervis... 28
Flower garden—
  Sweet Peas 26
Fruit trees, self-fertile, constant - cropping and seedling ... 31
Greenhouse on New Year's Day, the ... 26
Hartless, Mr. A. J. ... 22
Indoor plants—
  Acacia verticillata... 27
  Bertolonias... ... 27
  Hippeastrum advenum major ... 27
  Hippeastrums in Kenya Colony ... 27
Law notes—
  Frauds on nursery firms 37
Lilies in 1928 30
Lily pests and diseases, American investigation of 22
Mesembryanthemum... 34
National Institute of Agricultural Botany, the 21
Obituary—
  Dixon, Charles ... 37
Primula, the genus ... 34
Rose trees, marking of imported 36
Societies—
  National Chrysanthemum 37
  Yorkshire Flower Show and Gala ... 37
Trees and shrubs—
  Kalmias 28
  Sophora tetraptera 29
  Trachycarpus excelsa 29
Vegetable garden—
  Onions 36
Weather records in 1928 22
Week's work, the ... 24
Wild garden—
  Senecio japonicus ... 26
Winter-flowering annuals in America... 27
Woodland garden—
  Foxgloves 26

ILLUSTRATIONS.

Chrysanthemums at Downhills Park, Tottenham ... 23
Crawfurdia trinervis 28
Foxgloves at Kew... 26
Hartless, Mr. A. J. 22
Hippeastrums in Kenya Colony... 25
Lilium Bolanderi in Mr. Grove's garden, 1914... ... 31
L. centifolium, scale propagation of 31
Lilium sp. at Bodnant, 1928 30
Soil sterilisation, apparatus for 35
Trachycarpus excelsa at Tongswood 29

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 37·9°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, January 9, 10 a.m. Bar. 30·7. Temp. 38°. Weather, Misty.

The National Institute of Agricultural Botany.

WHEN this institution was founded at Cambridge, in 1919, high hopes were entertained by its promoters. The eyes of plant breeders had long been fixed on the great station at Svalof, in Sweden, where the labours of Nihlson-Ehle to produce improved varieties of farm crops by scientific methods had been rewarded by repeated successes, and even growers here had come to acknowledge the outstanding merits of Swedish varieties of Wheats and Oats. The Cambridge institution, confessedly, was modelled on Svalof; it was to be a fruitful blending of the scientific skill of Sir Rowland Biffen, with the practical business organisation needed to grow on and market the improved plants to be produced by the plant breeders. Now, at Svalof there are really two administrative units, one purely scientific, producing improved varieties in small lots; the other a business establishment equipped with a modern plant for cleaning and grading grain in bulk, run in conjunction with a number of seed-farms. The scientific, however, controls the business department, in the sense that the latter cannot handle varieties not approved by the former, which at the same time tests and guarantees every parcel of seeds issued by its partner. A remarkable feature of the business end of Svalof is the size and completeness of the seed-cleaning machinery, the capital value being upwards of £30,000. It is, indeed, impossible to conceive any really effective means of distributing good seeds that do not include costly machinery for cleaning and grading; for every practical man knows how rapidly a pure pedigree strain of seeds deteriorates if left to the tender mercies of the ordinary threshing machine. We are glad, therefore, to learn from the report of the N.I.A.B. that has just been issued, that funds are now available for the erection of buildings and plant which will enable it to undertake an indispensable branch of the business, and thus complete the model of the parent Svalof. The Institute will never reach its full development until seeds with a Cambridge guarantee of purity and trueness of variety appear on the market. Hitherto, it has been constrained to leave the control of growing on and marketing largely in the hands of the trade, and thus, in a large degree, the seeds have failed to reach the farmer directly. The Swedish institution is in the happy position of being permitted to enter the seed market freely; here the deservedly commanding position occupied by the leading seed firms precludes direct means of access, but some way by which benefits (to which, be it noted, the tax-payer has contributed), will reach the agriculturist, will, doubtless, be devised without any undue interference with vested interests. It is not intended, however, to suggest that the work of the N.I.A.B. has hitherto been nugatory; on the contrary, it has been engaged on useful work. With a view to settling the best varieties of crops for use in different parts of the country, the Institute for some years past has been engaged on a number of schemes of great practical utility. It has established a number of crop-testing stations, and as a result much reliable evidence has been gathered in relation to a number of crops. Again, the Institute controls the Potato research testing station at Ormskirk, where, *inter alia*, under the guidance of Dr. Salaman, the Synonym Committee has settled many vexed questions of importance to horticulturists. In the report under notice, mention is made of a remarkable scientific development in relation to Wart Disease of the Potato. One of the objects with which the Ormskirk Station was founded was to verify the claims made of resistance to the disease by the breeders of new varieties, a task which hitherto has entailed two years' trial in disease-infested soil. But in July last Miss Glynne, of Rothamsted, discovered a method by which the resistance of a variety can be settled in the laboratory in three weeks. That the method can be applied to the Ormskirk work has now been proved by the staff there. It is also of interest to learn that the recently discovered methods of hastening the sprouting of Potato seed sets by the use of certain chemicals have given good results at the Lancashire centre. Altogether, the last report of the N.I.A.B. is the most encouraging that has yet appeared.

The Gardeners' Chronicle Almanac, 1929.—In accordance with our usual custom, we present our readers with an Almanac in this, the second issue of the New Year. The list of horticultural meetings and exhibitions is as complete as this early date, and space, will allow. Some dates have been received too late for insertion, but these, and others received later, will be included in due course in our "Appointments for the Ensuing Week." Secretaries will greatly oblige us by kindly sending dates of their fixtures so soon as they have made their arrangements for 1929.

Gardeners' Royal Benevolent Institution.—The eighty-ninth annual general meeting of the Gardeners' Royal Benevolent Institution will be held at Connaught Rooms, Great Queen Street, London, W.C.2, on Thursday, January 24, 1929, at 3 p.m., for the purpose of receiving the Report of the Committee and the Accounts of the Institution (as audited) for the year 1928; electing officers for the year 1929; and for the election of twenty annuitants on the funds. The chair will be taken by Leonard Sutton, Esq., C.B.E., Chairman of Committee, at three o'clock. The poll will be opened at three o'clock and closed at four o'clock precisely.

Captain F. Kingdon Ward.—Looking very fit and well, Captain F. Kingdon Ward has just returned from his eighth plant-hunting expedition in Asia, and brought with him the manuscript accounts of his travels, together with numerous photographs. We hope to resume the story of his journey and discoveries in our next issue. Meanwhile, Captain F. Kingdon Ward has only a few weeks in which to prepare for his next trip to the East.

Legacies to Gardeners.—The late Major Hubert George Howard Galton, of Hadzor House, Droitwich, who died on September 21, left £150 to his gardener, Mr. W. B. Smith.—The late Mr. Walter Maddoc Simpson, of York Road, Birkdale, who died on October 29, left £100 to his gardener, Mr. Richard Sefton Robinson.—The late F. J. Yarrow, Esq., of Abbey Road, St. John's Wood, left his gardener, Mr. A. Robertson, £1,000, and Mrs. Robertson, £100.—The late Mr. William Higginbotham, of Palatine Road, West Didsbury, Manchester, who died on November 5, left £50 to his gardener, Mr. John Bailey.—The late Mr. Kenneth Eldmann Chalmers, of Blackbrook, Bickley, who died on November 9, left £250 to his gardener, Mr. Albert E. Gibbs.—The late Lady M. A. James, of Springfort, Stoke Bishop, Bristol, left £75 to her gardener, Mr. Alfred Charles Fletcher.

Belgian Florists' Banquet.—On Saturday, December 15, 1928, the annual florists' banquet took place at 7.30 p.m. in the rooms of the Ermitage Hotel, in Brussels, Belgium. In a country where flowers take such an important position, not only in the affections of the people, but also in their economic life, such an event is naturally of some importance, and it was a large and distinguished company which sat down to table, the President of Honour being M. Odon Warland, the famous cigarette manufacturer and horticultural enthusiast. There were also present certain foreign guests, including the President and Vice-President of the Paris Florists' Union. With the champagne, the speeches began, the opening toast—the President—being proposed by M. Paul Marin, the President of the Society, the Union des Fleuristes de Belgique.

A New Garden in Fleet Street.—In the midst of the struggle which is now being made by a few public-spirited people to preserve the few remaining gardens and squares left in London, it is cheering to hear of any additions to the scanty acreage, however small, and it is pleasant to be able to record that in Mitre Court, on the south side of Fleet Street, a small piece of ground is being made into a garden. The land is the property of the Inner Temple, whose buildings it adjoins, and it is now being carefully turfed over and planted with small trees. In the centre of the turf is a flower bed, surrounded by a narrow, paved walk, and this will no doubt be planted in due course with bedding plants according to the season. When the trees have attained to some size, and the turf is settled, the tiny garden will do much to relieve the austerity and starkness of the old court. It is greatly to be hoped that the heavy iron railings, between five and six feet in height, with which the ground is now surrounded, will be replaced by a low paling sufficient to preserve the turf from damage, but enabling passers-by to obtain an uninterrupted view of the garden.

Fédération Horticole Professionelle Internationale.—The next meeting of this Fédération will be held in London during the period of the

Chelsea Show, which latter event is to take place on May 22 to 24, 1929. Among the subjects for discussion will be: Overproduction and means of avoiding it; The international transport of horticultural commodities; Phytopathology and importation of plants; The Rome International Institute of Agriculture; Dumping; and The possibility of improvements in the arrangements for national and international horticultural exhibitions. The date and place of the next year's Conference will also be fixed this year. It will be a great pleasure to British horticulturists to welcome the foreign delegates to these shores, and show them whatever progress may have been made in British horticulture since they were last here, besides doing all that is possible to make their stay a pleasant one. "Chelsea" weather is notoriously unreliable, but it is to be hoped that on this occasion at least there may be a sunny and comparatively warm period.

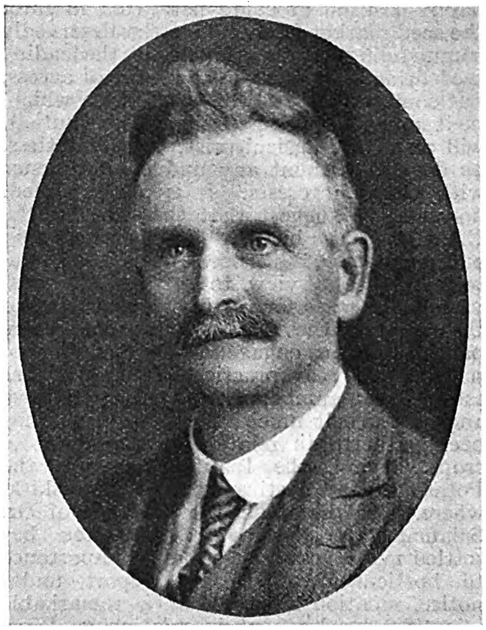
Weather Records in 1928.—During the past year, several new weather records have been set up. In the midlands, January was the wettest January for 137 years. On February 11, at Liverpool, a gale reached the record velocity of 104 miles per hour, and the city experienced another severe gale on August 26. On the night of April 8-9, London experienced a record maximum temperature of 55°, while the Scilly Isles were visited by driving showers of sleet and snow. April of last year, at Edinburgh, was the driest for six years. In the London district June was the wettest and July the sunniest for the past six years. Edinburgh enjoyed more sunshine during September than in any month for twenty-two years. In the third week of October London suffered exceptionally severe gales, culminating in the tornado of October 22. On December 7, more sunshine was recorded at Kew than on any December day since 1881.

Park Employees and Unemployment Insurance.—A curious position has arisen in consequence of the decision of the Ministry of Labour classifying public park employees as agricultural labourers, thus depriving them of the benefits of unemployment insurance under the statutes. Nearly six hundred men in the employment of the Parks Department of Glasgow Corporation—gardeners and their assistants, bowling green and tennis court keepers, golf green keepers, park labourers and fencers, etc., are affected. Until October 3, these workers were considered by the Department as insurable, and as their contributions were regularly deducted from their wages, the Corporation has now lodged a claim for the refund of the money. It is understood that the Ministry will refund all contributions made during the past six years, and that these will amount to £4,000 in the case of the men, and to a like sum in the case of the Corporation.

Cornish Broccoli for Germany.—Mr. H. W. Abbiss, Horticultural Superintendent for Cornwall, in the course of a lecture which he gave at Bridge quite recently, stated that he would be leaving for Germany shortly with a view to finding markets in that country for Cornish Broccoli.

Azalea Exhibition at Ghent.—The Society known as the Belgian League of Azalea-Cultivators, which has its headquarters in Ghent, Belgium, organised on the Saturday and Sunday before Christmas an exhibition of flowers which can be forced into bloom for Christmas. Azaleas naturally took pride of place, but there were also large quantities of Cyclamens, and many foliage plants, such as Bromeliads, Dracaenas, Ferns, Anthuriums and Palms. The purpose of the exhibition was to make the Azalea and other winter-flowering plants more popular with the public, and in especial to demonstrate that the Azalea can be had in full flower by Christmas. Two large halls in the flower market were filled with the exhibits, which made a brave display in their warm, brilliant colours. Among notable persons who assisted at the opening ceremony were M. van de Weghe, the President of the League, MM. Pynaert, Spae, and A. De Smet, of the Belgian Chamber of Horticulture, MM. Delmotte and Duquesnoy, of the Ghent Horticultural Society, and M. de Wilde, the Ghent Director of Parks and Gardens. A number of awards were made to exhibitors, including a Gold Medal diploma to Messrs. Sanders, of Bruges, for Azalea novelties Memoria Sander and Erica Sander.

Mr. A. J. Hartless.—Like many another successful gardener, Mr. A. J. Hartless had the advantage of an early training under his father, in this case at King's Walden Bury, where Mr. T. J. Hartless was gardener for many years and retired only in 1921. On leaving King's Walden Bury, Mr. A. J. Hartless went to Aldenham, where he served for three years under Mr. Beckett before going to Kew. He took the usual courses of study at Kew and also attended land-surveying classes at Richmond, and sat successfully for the South Kensington horticultural and agricultural examinations, after attending courses at the Regent Street Polytechnic. At Kew, Mr. Hartless was for some time in the Arboretum Department, at a period when many large trees were lifted and transplanted; subsequently, he was employed in the rock garden, and these two experiences have been of great value to him in his present position. He next obtained a post in the Parks Department of the London County Council, and while there sat for the R.H.S. Parks Examination, securing a First Class Certificate, and, with it, immediate promotion. During this period, he became Secretary of the now defunct British Gardeners' Association, and gave lectures at its meetings; his lectures attracted attention and did much to secure him the appointment of Assistant Lecturer at the Horticultural Department of Reading University, and the charge of the fruit estate at Shinfield. Later, he became gardener to Lord Marcus Beresford, and early in 1914 he took charge of Lord Rothermere's garden. At the outbreak of war, he became responsible for supplies of vegetables and fruits to local and London military hospitals, adding two other gardens and, a stretch of agricultural land to Lord Rothermere's garden for this purpose. Not long afterwards, Mr. Hartless joined the Army, and on the conclusion of the armistice, gave horticultural lectures and demonstrations to the troops in France, many of the men being Canadians. On demobilisation, Major Harrison invited Mr. A. J. Hartless to return to King's Walden Bury to assist Mr. Hartless senior in bringing the gardens back to their former well-kept condition. This invitation was accepted, and in February, 1919, he commenced the work of reconditioning the famous rock garden, and by the following spring had raised no fewer than 20,000 plants for that purpose. Mr. Hartless senior retired in 1921, and since then his son has had entire charge, carrying out many alterations and improvements in Major Harrison's beautiful garden and arboretum. Mr. A. J. Hartless takes an active interest in the successful King's Walden Flower Show and the Hitchin Chrysanthemum Society, and for three years in succession he has won the Fruit Challenge Cup at Hitchin, with admirable collections of hardy and indoor fruits, besides many other awards.



MR. A. J. HARTLESS.

Diaries for 1929.—Among the diaries received by us with each New Year, none is more useful as a desk companion than the *Fruit, Flower and Vegetable Trades' Year Book and Diary*, published by the Lockwood Press, 1, Mitre Court, Fleet Street, price 2s. 4d. post free. The diary pages, interleaved with blotting paper, are ample for memorandum purposes, while the literary pages contain much useful information, including recent Acts of Parliament relating to State Insurance, the Marking of Fruits, and Shop Hours of Closing. There is a very informative article on "Mushroom Growing," by Mr. W. Dyke, and another, "The Manuring of Vegetable Crops," should prove helpful to the practical gardener. The publication contains much valuable statistical matter, and a diary of monthly operations in orchard, market garden and nursery. There is also much of interest to florists, the notes and illustrations dealing with the making of wreaths, etc., being especially valuable.—A very handy pocket diary, extremely well bound and of convenient dimensions, has been published by the Sundries Department of Messrs. Geo. Monro, Ltd., 4, Tavistock Street, Covent Garden, W.C.2. It is composed of two distinct and separately bound sections, the first, containing reference notes on cultivation, manuring, insect pests and fungus disease control, planting and other subjects, together with several useful tables, is held by an elastic band and may be removed if necessary. The diary portion is in two sections, one for ordinary memorandum purposes, and the other for monthly cash accounts.

"Ten Months Abroad."—Under this title, Mr. William Cuthbertson, V.M.H., has produced a small book of 187 pages, giving an account of his recent trip, with Mrs. Cuthbertson, round the world. It is intended for distribution among his friends and relatives only, and consequently has been written in an easy and charming style, with many personal touches, yet it is withal highly instructive, being the result of keen and shrewd observation concerning the individuals met, and the places and establishments visited, throughout the tour.

National Rose Society.—The fifty-second annual general meeting of the National Rose Society will be held at Caxton Hall, Victoria, on Wednesday, January 16, at 2.30 p.m. Consideration will be given to a proposed new rule in place of the present Rule No. 20; it is as follows:—All questions affecting membership or the conduct of any member of the Society shall be dealt with by the Council in its absolute discretion, and the Council may, by a majority of two-thirds of the members present and voting at a meeting convened by a notice stating that the removal of a member will be considered thereat, or at a meeting specially convened for the purpose, order the removal of the name of any person from the list of members, and thereupon such person shall cease to be entitled to any of the rights and privileges of membership of the Society.

American Investigation of Lily Pests and Diseases.—During the year 1928, an intensive study of the diseases and pests of Lilies was conducted through the medium of a Lily Disease Investigation Fellowship, organised through the co-operation of the Horticultural Society of New York, the Boyce Thompson Institute of Plant Research, the Cornell University, and the New York Botanic Garden. The Fellow for Research, Mr. Carl F. Gutterman, has presented a brief summary of the first year of this Fellowship, while a complete report of the year's work will appear in the *Year Book* of the Horticultural Society of New York. Mr. Gutterman states that most of the failures in growing Lilies are due to diseases and to attacks of insects, and not merely to factors of culture as is generally supposed. The mosaic disease, due to a contagious virus, is the most serious disease of Lilies; a diseased plant never recovers, and so long as it lives it is a source of contagion for healthy plants. Investigations indicate that the disease is distributed by insects and probably by aphids. During last winter, Mr. Gutterman spent some time in Bermuda, studying the "yellow flat" virus disease which has proved so destructive to Bermuda Easter Lilies. The botrytis blight, a serious fungus disease of various Lilies, is described in the report, and methods for controlling it are given, while several fungi responsible for the rot of Lily bulbs in storage and transit have also been determined, and experiments for their control are being conducted. It is also stated that the bulb mite causes very serious injuries to Lily bulbs, both under glass and in the open garden, in America. At present no efficient control for this insect is known, and the subject is to receive special attention in the future.

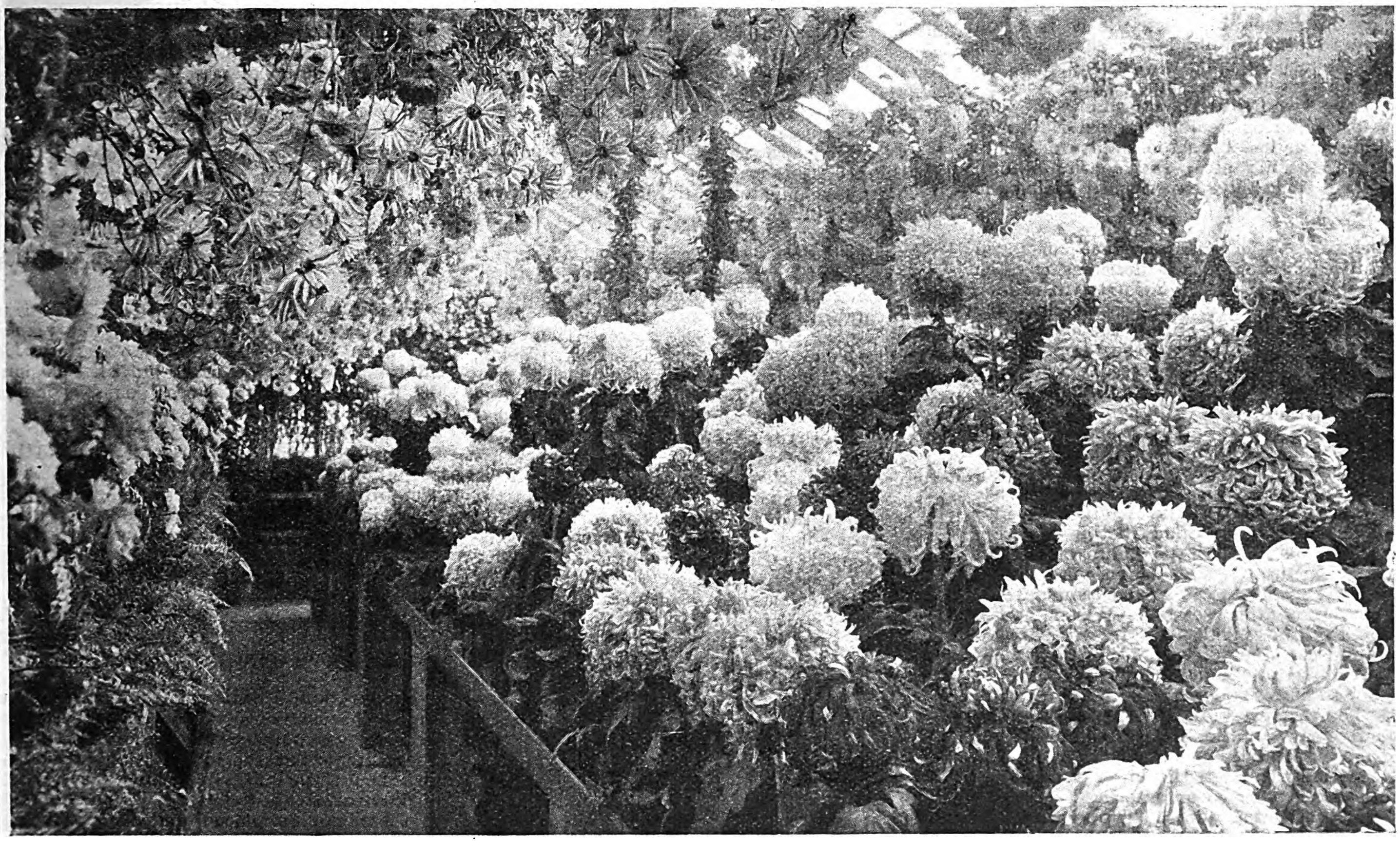


FIG. 9.—CHRYSANTHEMUMS AT DOWNHILLS PARK, TOTTENHAM.

The Royal Gardeners' Orphan Fund.—The annual meeting of subscribers to the Royal Gardeners' Orphan Fund will be held in the Lecture Room, at the R.H.S. Hall, Westminster, on Wednesday, February 13 next, at 3 p.m., when the Committee's Report for 1928 will be submitted, and the Officers for 1929, and the duly nominated orphan children, will be elected. All particulars concerning the Fund may be obtained from the Secretary, at 19, Bedford Chambers, Covent Garden, W.C.2.

Gift for Scientific Research at Cambridge.—We understand that the late Mr. John Humphrey Plummer, an estate-agent of Southport, who died a short time ago, left estate valued at £250,000, almost all of which has been bequeathed, in the form of a trust to be known as the John Humphrey Plummer Foundation, to Cambridge University. The bequest is intended for the endowment of two chairs at Cambridge for the promotion of modern scientific research.

American Iris Society.—During the past year, this Society has been actively engaged in further increasing the popularity of the Iris in America, chiefly through the medium of exhibition gardens, which are being established throughout the United States. A garden, containing one hundred varieties of Irises, has been laid out at the Normal School, Keene, N.H., while approximately one hundred varieties are being used at the Massachusetts Agricultural College; and one-hundred-and-twenty-five varieties are to be planted by the Haverhill Park Department next spring. Four hundred varieties of bearded Irises are being tried at the Harvard Botanic Gardens, Cambridge, Massachusetts, and the University of New Hampshire has received ninety varieties. Arrangements are also being made to establish exhibition gardens at the Maine, Vermont, Connecticut, and probably the Rhode Island, state colleges.

Chrysanthemums at Downhills Park, Tottenham.—The gardens at Downhills Park, Tottenham, are a great attraction during the summer months when the flower beds are particularly bright, but in the autumn Chrysanthemums take pride of place and attract thousands of people from far and near, who not only pay tribute to the cultural ability of Mr. E. Welfare, but also to the skill with which he arranges his flowers, especially in the festooning of the interior of the roofs of the greenhouses with Single varieties (Fig. 9). That these displays give much pleasure and satisfaction is proved by the fact of the public subscribing, through the medium of collecting boxes, over £100 in aid of local hospitals. The photograph from which our illustration is reproduced was taken by Mr. W. P. Lovelace, of Highgate, an amateur of no mean skill.

Appointments for the Ensuing Week.—Monday, January 14: East Anglian Institute of Agriculture lecture; Streatham Rose and Sweet Pea Society's lecture. Tuesday, January 15: Royal Horticultural Society's Committees meet; Winchester Horticultural Society meets; Croydon Gardeners' Society's annual meeting. Wednesday, January 16: National Rose Society's annual meeting; Buxton and District Chrysanthemum Society meets; Burton-on-Trent Chrysanthemum Society meets. Thursday, January 17: Ipswich Gardeners' Association meets; Gainsborough Chrysanthemum Society's annual meeting; Sundridge and Brasted Horticultural Society meets. Friday, January 18: Manchester and North of England Orchid Society meet; Dundee Horticultural Society meets.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Sequoia sempervirens and gigantea the same.*—I am well acquainted with every part of the country trod by Douglas. Douglas's journeys seldom exceeded thirty miles from the coast, and if he visited the grounds in latitude 38° 15′ N., the only Coniferous tree he could have seen for twenty miles from the coast was Taxodium sempervirens, some scattered specimens of Abies Douglasi and Pinus Edgariana. From twenty miles from the coast eastward to an elevation of one thousand feet on the Sierra Nevada, scarcely a Coniferous tree of any kind exists. Hartweg travelled over Douglas's tract from south to north, and never saw Wellingtonia, from which I venture to say that that plant was never found except in the locality stated in the *Chronicle*, which is more than 160 miles away from the coast, and fully 120 miles from Douglas's track. The tree alluded to by Douglas is unquestionably the Taxodium sempervirens of Lambert, or Sequoia of Endlicher, which he must have seen in great abundance, both on the mountains of Santa Cruz and of Santa Lucia. From my own knowledge of this tree, it abounds along the coast from latitude 35° 30′ to Humboldt in latitude 41° N., which may be its northern limit. It occupies the deep, gloomy ravines of the western slopes of the mountains, rarely on the east sides, and seldom beyond the elevation of 2,000 feet above the level of the sea. Taxodium sempervirens is the largest tree I saw in California, before the discovery of Wellingtonia; it presents to the eye all the beauty and grandeur that Douglas has described. I have often seen trees three hundred feet high, and from ten feet to fifteen feet in diameter. *W. Lobb.* [It will be seen from this statement that we were right in regarding Wellingtonia as different from the plant described by Douglas. Sequoia gigantea must now be erased from catalogues, it being a nonentity.] *Gard. Chron., January* 14, 1854.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE
Manchester.

Preparations for the Coming Season.—A good stock of potting materials, *i.e.*, pots, fibre, loam, charcoal, sand, etc., should be obtained, the fibre and loam prepared, and crocks crushed in readiness for the busy potting season now approaching. A supply of fresh Sphagnum-moss should be secured during open weather; this is very difficult to obtain during severe frosty weather, and when supplies are held up it often means delay in necessary repotting. Any arrears in washing down and cleansing the houses should be dealt with so soon as possible, also any necessary repairs or additions to the blinds should be attended to now, so that they may be ready for use in the early spring; in favourable districts it is often necessary to use the blinds for short periods early next month over plants with tender foliage, during bright spells of sunshine, when very cold winds prevent much air being admitted. The foliage of Odontoglossums, in particular, is often injured or lost by a too sudden exposure to bright sunshine after the continued dull weather and short days experienced during the winter months.

Temperatures.—The maintenance of even temperatures in the different divisions is often very difficult at this season, owing to the sudden changes of the weather, and the usually very cold winds experienced during the early part of the year. Fluctuations of the temperatures should be avoided so much as possible by careful heating and ventilation; both are necessary in all divisions now, but excessive use of either should be avoided, as more damping down is required to counteract the dryness in the air and the plants may thereby be started prematurely into growth, while cold draughts are injurious. No plants should be hurried into growth at this season; much better flowering growths are obtained as the hours of sunlight increase and more genial conditions prevail. As a general guide, the following temperatures are suitable at this season:—Warm house, day, 65° to 70°; night, 60° to 65°; intermediate house, day, 60° to 65°; night, 55° to 60°; and cool house, day, 55° to 60°; night, 50° to 55°. The maximum temperature should be reached about noon and the minimum early in the morning. Fresh air should be admitted on all favourable occasions, especially through the lower ventilators, where the air is warmed on entering by contact with the hot-water pipes. Top ventilation should be given every day during suitable weather, if only for a short period, so as to keep the atmosphere sweet.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN,
Brocket Hall, Hertfordshire.

Chrysanthemums.—Where large blooms of Chrysanthemums are required, rooted cuttings of such varieties as Majestic, W. Rigby, Mrs. G. Drabble and Queen Mary should now be ready for transferring singly into sixty-sized pots. These varieties require a long season of growth to produce the best results, while the propagation of most of the others is best delayed until now. After being potted, they should be stood on a shelf near the roof-glass. The soil for this potting may consist of three parts loam and one part leaf-mould, with a little bone-meal and sand added. This mixture should be prepared several days before it is required for use and placed in the house so that it is warmed to the house temperature. Cuttings of other Japanese varieties, also of Single and Decorative sorts, may now be inserted in sandy soil and stood in a propagating frame, where they should root readily in a temperature of about 50°. It is a great mistake to attempt to root Chrysanthemum cuttings in a high temperature, as this usually results in thin, spindly growth. Some growers place the cuttings singly in thumb pots, but I see no necessity for this practice; several may be placed in each pot, provided they are not allowed to remain in the receptacles until the roots become entangled. Remove the lights each morning to allow the condensed moisture to escape. After sufficient stock has been secured, many of the old stools may be dispensed with, retaining only sufficient to secure late cuttings in April to produce small plants for growing in six-inch pots for decorative purposes. It is surprising what large blooms can be obtained from plants in pots of this size, if they are grown on a single stem; personally, I consider this the best method of cultivating Chrysanthemums for grouping purposes.

Carnations.—The top ventilators of the house in which Carnations are in bloom should be open night and day, and unless the weather conditions become too severe, they should never be closed tightly. A night temperature of 50° is suitable for plants in flower, but on mild nights this temperature may be exceeded by several degrees, to the benefit of the plants. On the other hand, allow the temperature to fall a few degrees on frosty nights rather than create an arid atmosphere, as this would result in weakened growth. Concentrated manures should be used sparingly just now, but the amount may be increased towards the end of the present month.

Carnation Pests.—Red spider, rust and thrips are probably the worst enemies of the Carnation. The former may be kept in check by spraying the plants with salt and water, using two ounces of salt to the gallon of soft water. This spray will also help to keep rust in check. Volck, used according to directions, proves a very efficient spray for this pest. This will be found to take the "bloom" off the foliage, but it returns in a very short time. Rust may be treated with a copper compound that can be obtained from most sundriesmen. Thrips are sometimes a source of trouble, and unless checked in the early stages, the flowers will be marked badly. This pest has a great liking for the dark-coloured varieties. Frequent fumigating with nicotine should keep thrips in check, but when attacks are severe it may be necessary to spray the buds frequently in their early stages with pure nicotine (one ounce to two gallons of water), but buds showing colour should not be sprayed. Vapourising the house with flowers of sulphur after all the open flowers have been cut, is also a good method of dealing with this pest.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P.,
Ford Manor, Lingfield, Surrey.

Pot Figs.—The earliest house containing Fig trees in pots will have been closed last month and growth should soon be moving. If fermenting material of litter and leaves is used, this will be found of great assistance, and may be added to with advantage to keep up a steady temperature, and also to maintain suitable atmospheric conditions. A steady bottom heat of 75° to 80°, with a night temperature of 58° to 60° on mild nights, and 70° to 75° by day, in favourable weather, together with light syringings and damping down, and a little air admitted on bright mornings, should be found suitable for trees started last month. The second house,—in many cases the first house—, should now be closed; if pot trees are used, the treatment advised above, with a night temperature of 48° to 50°, rising 5° to 10° higher on bright days, will be suitable. Syringe the trees and damp the houses carefully according to the outside atmospheric conditions, so that the trees may be dry before nightfall. Avoid any hard forcing at this stage in cold weather; rather let the heat decline a few degrees. Close permanent Fig houses and treat them in a similar manner, water the borders with tepid water at least twice to bring them into a moist growing condition, and keep a sharp look-out for mealy bug at this stage.

Early Vines.—Close the permanent vinery now if ripe Grapes are required at the end of May or beginning of June. Water the border once or twice with tepid water to restore it to a moist condition. Syringe the vines and damp the house daily in bright weather, and keep the house closed for a fortnight or three weeks; the night temperature should be about 48° during that period.

Vine Propagation.—If the planting of new vineries or the renewal of old ones is contemplated, a sufficient number of eyes should be inserted during the present month in small pots or pieces of turf and placed in steady bottom heat. If a suitable house or pit is not available, collect the growths and defer the starting of the eyes until next month, as when the days lengthen growth will be rapid and make good any apparent delay at the present time.

General Work.—Continue to push forward the work of pruning, top-dressing, and washing and cleansing the houses and trees. All late late houses should be cleared of Chrysanthemums or other tender plants so soon as possible, to give them a few weeks' rest before using them again. The weather of late has been so mild that all fruit trees under glass have not gone to rest so early as they should have done.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens,
Wisley, Surrey.

Planting.—The open weather experienced during autumn favoured out-door planting, but where arrears are still to be made up, it is advisable to defer the work until the beginning of February, when more genial conditions may be expected. The preparation of the ground should be pushed forward on every favourable opportunity. Where time and labour permit, all beds and borders should be trenched. The after results will justify the extra time spent in the initial preparation of the ground. Where planting is to take place in grassland, the holes may be opened and the soil left exposed to the weather for a few weeks, but under this system it is usually found best to open the holes as planting is proceeding. By doing so the chance of the soil exposed becoming sodden and unfit for planting is obviated.

Preparation of Soils.—It is wise to have a supply of the various soils required brought under cover so that they may be available no matter what the outside conditions may be. Loam, leaf-soil, sand, and a small quantity of peat will be the principal ingredients needed. If these can be placed under cover now, no difficulty should be experienced in having them in good condition as required during the next two months. Next to the supply of soil, the seed-boxes should be looked over and those requiring repair attended to. Seed pans and pots should be washed in readiness for the busy season.

Seed Sowing.—Seeds of a few subjects that require a long season to produce the best results will require to be sown now. This applies especially to the more northern districts. East Lothian Stocks, if sown now, and afterwards grown on in a cool house, exposed to plenty of light, make valuable bedding plants which give a long season of bloom. Probably the best time to sow these to get the best results is in early autumn, but for those who have omitted to do so, now is a favourable time. Antirrhinums, if not sown during autumn, should be sown now and grown on under cool conditions. These provide a wonderful range of colours, and are valuable where large quantities of bedding plants are required at small cost. The much despised Verbena venosa is easily raised from seeds, but requires a long season of growth to ensure the best results. Many gardeners seem rather afraid of the colour of this subject in the flower garden, yet it makes a very pleasing bed if used in conjunction with a grey-foliaged plant, such as Centaurea Cineraria, as an edging, and either Diplacus (Mimulus) glutinosus or Calceolaria amplexicaulis as dot plants. Sow sufficient seeds of Centaurea Cineraria and Cineraria maritima to ensure a plentiful supply of grey-leaved plants for the summer bedding schemes. These silvery-grey-leaved subjects give a quiet and restful effect to the flower garden and should be used more freely.

Fuchsias, Heliotropes, etc.—Where large numbers are required, stock plants of these and other subjects should be placed in a warm pit to provide sufficient growths for propagation purposes next month.

Herbaceous Borders.—Where it was not possible to complete the lifting and transplanting of herbaceous plants, as anticipated during autumn, no opportunity during open weather should be missed for completing the trenching of the borders in readiness for planting during February and March. To ensure the plants doing well, the soil should be trenched at least two spits deep; the subsoil should be broken up, and should have added to it any decomposed vegetable matter available. If the soil is heavy, mix plenty of grit, burnt refuse, decayed leaves and horse manure with it; if light and sandy, cow and pig manure and decayed turfy loam, mixed freely with it, should give the best results. It is not advisable to do much planting this month, except on warm, sandy soils, but every endeavour should be made to have everything in readiness for the time when planting may be carried out with freedom.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Rhubarb.—Good stools of Rhubarb should be lifted and placed in the forcing house; plenty of leaves should be pressed well around the roots, and an even temperature should be maintained in the structure. Seeds of Rhubarb may be sown in boxes, to raise plants for making new beds. Prick the seedlings off into three-inch pots or into boxes when they are large enough to handle, using a compost of good loam and a little sand. Where new beds of Rhubarb are required, the ground should be trenched and plenty of manure and old leaves worked into it.

Asparagus.—When forcing Asparagus, it is important that four-year-old roots are available for this purpose. Deep frames, with plenty of horse manure placed in the bottom and well trodden down, then covered with four inches of soil, should be prepared. Pack the roots closely together, then cover them lightly with soil. Keep plenty of mats handy for covering in case of frost.

French Beans.—For growing early Dwarf Beans under glass, eight- or nine-inch pots may be prepared, placing clean crocks in the bottom and covering them with rough material for drainage. Fill the pots with good fibrous loam to three-quarters their depth, and place them in a warm house, and give the soil a thorough soaking with water to settle it. The following day, sow five to six seeds in each pot.

Broad Beans.—Broad Beans that were sown in the autumn of 1928 should have a mulching of short litter placed between the rows to provide protection from frosts. Another sowing may be made on a border facing south. The ground for this crop should have plenty of manure worked into it and should be deeply dug or trenched.

HARDY FRUIT GARDEN.

By Henry H. Cook, Lecturer in Horticulture, Reading University.

North Walls.—Many gardeners have an extensive area of wall surface with a northern aspect, and the profitable employment of such wall space for fruit trees is, in many cases, not taken full advantage of. The Morello Cherry is employed universally for such an aspect and, on occasions, we find use made of the stewing varieties of Pears, such as Vicar of Winkfield, Catillac and Uvedale's St. Germain. It is not general, however, to find the Sweet Cherry in such a position; yet there are several excellent dessert varieties which not only thrive but bear an abundance of fruits when given a northern aspect, thereby extending the season of this most useful dessert fruit. The soil in which the trees are to be planted should, of course, be of the best, to compensate, so far as possible, the handicap incurred by the absence of sunshine to warm the air and soil. The few essentials are ample drainage, and the addition of good turfy loam to improve the staple soil, together with some lime rubble, and half-inch bones. It is of great importance, too, that the trees should be planted so shallowly as possible. Keep the roots near the surface, where the soil is warmer, and apply a mulch during the summer months. The varieties of Sweet Cherries that succeed admirably under such conditions are Early Rivers', Elton, Governor Wood, Napoleon, Noble, and Florence. This last variety is one of the latest to ripen its fruits. and is therefore particularly useful in extending the Cherry season.

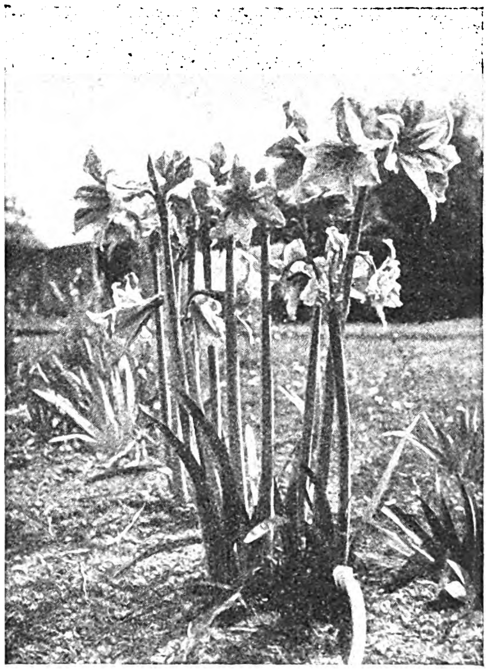


FIG. 10.—HIPPEASTRUMS IN KENYA COLONY.
(see p. 27.)

Black Currants.—Where the planting of Black Currants has been deferred, the earliest opportunity should be taken to complete this work. The soil, however, should be in a dry or crumbly condition to perform the work satisfactorily. It is becoming fairly general among commercial growers to plant the one- or two-year-old bushes in groups of three instead of singly as was, at one time, the custom. They should be planted a foot apart, and six feet should be allowed between the centre of one group and the centre of the next, and the same distance between row and row, the object being to obtain the utmost value from the space while the bushes are young and healthy. It is economical to plant one- or at most, two-year-old bushes, for it is very important that, immediately the planting is completed, the young bushes should be cut down almost to the ground level. This will induce each plant to produce three or more strong shoots in the coming season, which will bear fruits next year. For home use, or for local sales, there is no better variety than Boskoop Giant. The berries are large and sweet, and ripen almost a fortnight before any other. The varieties Baldwin and Goliath are both very heavy croppers and may be termed mid-season. Daniels' September should prove a useful late variety to those who are obliged to supply late fruits for stewing.

Established Black Currant Plantations.—The Black Currant is of such a fibrous-rooting nature that no attempt should be made to dig near the bushes. I am firmly convinced that the bulk of "reversion" is brought about by thoughtless mutilation of the roots. Draw back the surface soil from about the base of each bush, mulch with well-rotted farmyard manure to the full spread of the roots and, as you "point" between the rows, throw a forkful or two of clean soil on the manure to keep it in position. Where farmyard manure is not obtainable, a mixture of three parts bone-meal and one of sulphate of potash, applied at the rate of two or three handfuls to the bush, should form a useful substitute.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

Early Vegetables.—Where frames or pits are available for growing early vegetables, a good supply of hot-bed material should be prepared. Leaves and horse manure in equal proportions, or even leaves alone, if turned once or twice, should be in good condition for using when the time arrives.

Gooseberries.—Where birds are not troublesome in picking the buds off Gooseberry bushes, these should be pruned so soon as time allows. Depend mostly on the young wood for the production of fruits, cutting out all growths crossing or growing towards the centre of the bushes, so that the branches left radiate from the centre. Stray suckers or basal shoots should be removed with the heel intact and not cut back. When rearing young bushes, the leaders should be cut back to a bud pointing outwards, but when the bushes have reached full size little or no cutting back is necessary.

Red Currants.—All the lateral growths on Red Currant bushes should be spurred back to a few buds, leaving the leaders longer if necessary for extension purposes.

Black Currants.—Remove part of the old growth completely to admit sun and air to the centre of the bushes and lay in a succession of strong, young shoots from the base. By keeping the bushes in vigorous growth, big bud, and also reversion, are not so likely to affect them. If any evidence of big bud is present, remove the affected buds or, if possible, the shoot, and burn them at once. Then, in March and April, spray the bushes with a one per cent. solution of lime sulphur at intervals of ten days or so. Although not a cure, this retards the spread of the pest, and if the bushes are clean, may act as a preventive. The small-fruit quarters should not be dug, as surface rooting should be encouraged. A good top-dressing of fowl or other manure is beneficial.

Raspberries.—These will, of course, have received treatment some time ago, but if the canes overtop the wires or other supports, do not cut them back until March.

Hippeastrums.—Where a stock of these subjects exists, and the bulbs are in a well-ripened state, they should now be ready for starting, and may be brought on in batches as required. If the roots are in good condition it is a mistake to repot them; merely soak them in water and, after allowing the surplus water to drain off for a day or two, remove an inch or so of the surface soil and replace it with a mixture of equal parts of good loam, leaf-mould and sand. Plunge them in a mild hot-bed. when the flower spikes should soon make their appearance. If repotting is necessary, use a similar compost to that advised for top-dressing; a small quantity of ground bones may be added, but no animal manure. So soon as the flowers are over feed the plants with diluted liquid manure once or twice a week until growth is complete, when they should be gradually dried off, withholding water entirely by September.

FLOWER GARDEN.

SWEET PEAS.

One need not be an optimist to note continuity in the progress of the Sweet Pea; this is perhaps best substantiated by the present unique position of the National Sweet Pea Society. This concurrence of public favour is not without vindication, when one considers the flower of to-day in relation to its ancestors, particularly in form, size of flower, length of stem, the various and most delightful colours, and its sweet perfume, which, in spite of it having lost a small percentage at the expense of the other qualities, is sufficient to insure its favour as an indispensable florists' subject.

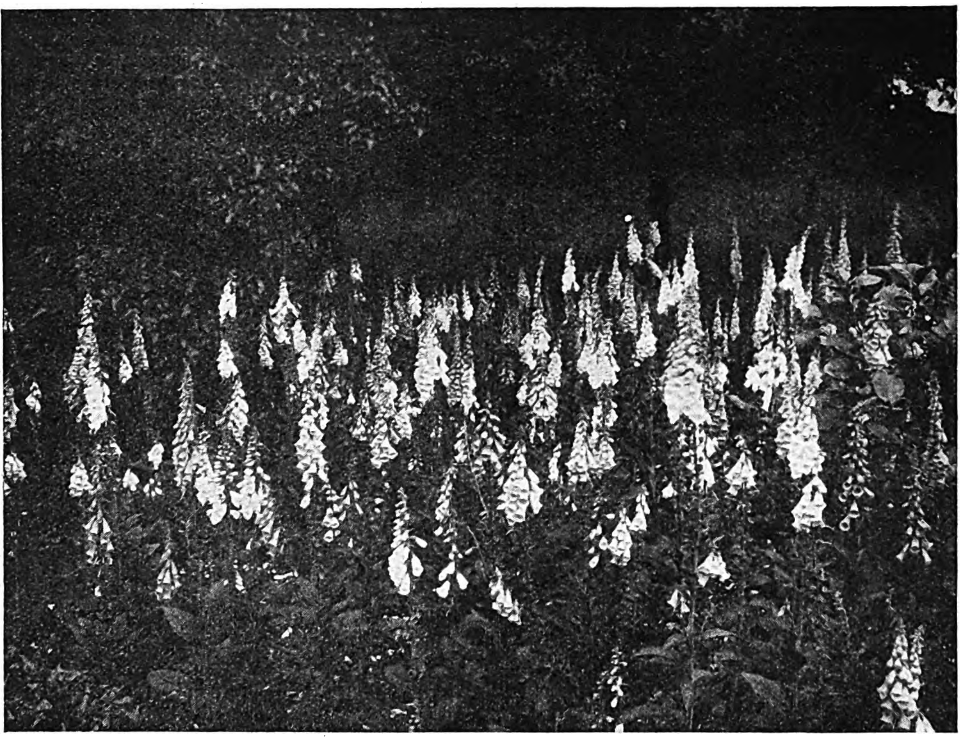


FIG. 11.—FOXGLOVES ON THE EDGE OF WOODLAND AT KEW.

The question of autumn or spring sowing of Sweet Pea seeds has always been a subject of controversy, but it really depends on the purpose for which the flowers are required, and the particular situation and locality in which the grower is placed. While autumn sowing is given preference by many, chiefly in view of producing blooms for exhibition, those who have deferred sowing until spring need have no apprehension, as excellent results may be obtained from seeds sown about the third week in January. A suitable compost for this purpose consists of three parts sifted loam and one part leaf-soil, with sufficient sand added to render it porous. The seeds are best sown in sixty-sized pots, as they may then be transferred to their flowering quarters without check at planting time; incidentally, the number of seeds to be sown in each pot should be equal to requirements in regard to purpose and space, provision being made for failures. Upon the completion of sowing sufficient water should be given to soften the seeds and encourage germination. The previous soaking of Sweet Pea seeds is not to be recommended, as, in consequence of this unnatural stimulation, subsequent vitality may be impaired. The practice of chipping seeds prior to sowing is not to be recommended; it is better to wait until about ten days have elapsed from the time of sowing, when, if any seeds are still found to be hard, they may then be chipped, and replaced in fresh soil.

Difficulty is often experienced in germinating white-seeded varieties, such as Matchless and Avalanche, owing to the seed coat being thin, and therefore very absorbent. This may, to some extent, be overcome by filling the pots to two-thirds their depth, and covering the surface with sand, into which, after it has been thoroughly watered, the seeds may be lightly pressed to half their diameter.

Cover the pots with sheet glass and paper, and when germination has taken place cover the seeds lightly with a sandy mixture. Although germination is conveniently accelerated by a temperature of 50 to 55°, particularly at this time of the year, the Sweet Pea is, nevertheless, a hardy annual, and to ensure success, it must be treated as such. The seedlings should be removed to cooler quarters and subsequently to cold frames so soon as possible, and finally hardened in readiness for planting.

The stopping of the plant has the effect of promoting strong basal growths. This should be done at the second leaf, and it is of importance that the prospective growths be visible, accompanied by good root action, before the operation is performed.

Among the varieties of Sweet Peas which should suffice to meet the needs of all classes of growers are Magnet, Olympia, Mrs. A. Searles, Gleneagles, Powerscourt, Grenadier, Jack Hobbs, Daffodil, Avalanche, Pinkie, Sybil Henshaw, Warrior, Charming, Sunkist, What Joy, Youth, Lilac Queen, Model, Bluebird, Chieftain, Huntsman, Hero, Delightful and Royal Sovereign.

Sweet Peas that were sown in October and are being grown for exhibition purposes should be potted singly into sixty-sized pots towards the end of January, returned to cold frames and kept close for a few days, after which, so soon as practicable, the lights should be removed altogether. *Thomas Baines.*

WILD GARDEN.

SENECIO JAPONICUS.

Senecio japonicus (syn. Erythrochaete palmatifida) is a stately plant, eminently useful in the wild garden or by the side of a pond or stream. It was introduced from Japan in 1866, and received a considerable amount of attention for some years after its introduction, but latterly has been planted less frequently in gardens. It is occasionally employed at the back of large borders, but there it does not always receive the amount of moisture it requires to enable it to reveal its true character.

S. japonicus is a true hardy perennial, and may be raised from seeds or increased by division. In one book of reference in my possession it is stated to attain only three feet in height, but this is an error, as it should grow to at least five feet high, and I have seen it nearly seven. It has handsome leaves which are about one foot in length, and usually divided into nine divisions. The flowers are of bright orange, and are borne on slightly branched stems during summer; they continue to open over a long period. As already indicated, S. japonicus requires a moist soil to enable it to show its true effect, and although planting it in a rich, stiff loam will, to some degree, compensate for lack of moisture, it will not do this satisfactorily, and the pond side or margin of a stream should fulfil its requirements much better than the border. *S. Arnott.*

WOODLAND GARDEN.

FOXGLOVES.

It is surprising that the Foxglove, naturally a plant for semi-shaded places and so well adapted to naturalising in the woodland or wild garden, is not used more extensively for this purpose, for the tall, stately spikes of richly-coloured flowers might be employed to brighten many a drab and uninteresting spot. The illustration (Fig. 11) depicts a group of them in just such a position at Kew, and the effect so produced was charming.

But it is not necessary that they should be confined to set beds; groups may be planted here and there among shrubs of only moderate stature, in the same way as Lilies are often employed, and having once been introduced to the woodland, they will firmly establish themselves, scattering their seeds and so providing a natural succession. During recent years the Foxglove—Digitalis purpurea—a familiar plant in woodland and hedgerow in this country, has been much improved by plant specialists, so that now several fine strains are available, the most striking that has come under my notice recently being that secured by W. B. Cranfield, Esq., Enfield, a strain typified by giant spikes of large, richly and delicately shaded blooms.

In passing, mention may also be made of Digitalis ambigua, of more lowly stature than the better-known native Foxglove, but, nevertheless, very charming when naturalised in the wild garden or in open woodland, in portions not too heavily shaded. The flowers of this species, from Switzerland, are pale yellow, and like its more stately congener, it produces an abundance of seeds with unfailing regularity, and has the same trait of being able to care for itself having once been introduced. Attempts have, I think, been made to cross this species with D. purpurea, but I do not think much success has yet been obtained in this direction. *F.*

THE GREENHOUSE ON NEW YEAR'S DAY.

The flower shops and market lists of plants in pots offer little beyond Azaleas, Ericas, Cyclamen, Primulas and foliage plants at this time of year. Yet visits to Kew and the diligent study of the Assistant Curator's recent notes on "Plants under Glass" in *The Gardeners' Chronicle* will suggest many others. Indeed, it is to Mr. Coutts' skill in finding good winter-flowering subjects that we at Burford owe most of our flowering plants at Christmas, all of which are grown in five-inch to eight-inch pots.

Buddleia asiatica bears sprays of white flowers with the fragrance of Freesias. It is a good house plant, as is Sparmannia africana, which is grown as a standard and carries its large clusters of white flowers well above the Plane-like foliage. The flowers are very interesting, as the red and golden stamens are sensitive, and when touched open fanwise; cuttings produce standards in a year. Reinwardtia trigyna and R. tetragyna are two beautiful plants with pale and deep yellow flowers, respectively, which resemble, but are double the size of, those of Linum arboreum.

Hibbertia volubilis is a noble plant with large glossy leaves and large yellow flowers, like St. John's Wort; the seeds are bright scarlet. H. montana is a neat little shrub and H. radicans is a beautiful climber with reddish stems and leaves; the flowers of both are bright yellow and freely produced. Libonia floribunda is a very old garden plant bearing tubular, scarlet flowers with orange tips, while Strobilanthes isophylla has beautiful, dark-green, pointed leaves and lilac, Pentstemon-like flowers—both are good house plants. Two pretty blue Nettles are Coleus floribundus, an east African plant with cobalt flowers, and Plectranthus chiradgulensis, with turquoise flowers: unfortunately, the flowers are rather sparse on both plants. The Correas are neat in habit and last well in a room; C. speciosa var. Harrissii is floriferous and carries deep pink flowers, while C. cardinalis, usually grafted on C. speciosa has scarlet flowers but is not so good a grower. Eranthemum pulchellum, which used to be so well shown at the R.H.S. meetings by the late Duchess of Wellington, has beautiful blue flowers, unfortunately fugacious. There is a considerable choice of Jacobinias. J. coccinea is scarlet and J. chrysostephana orange, both brilliant in colouring.

Of greenhouse plants, the Acacias take a lot of beating. They may be grown and flowered in thumb pots, and when planted out they make trees. The first to flower here is A. platyptera, which, with its broad phyllodes, is curious, rather than attractive. An elegant plant known here as A. (Albizzia) lophantha Neumannii, has sulphur-yellow or sulphur-green flowers and pinnate leaves; A. linearis is a very elegant plant with light feathery foliage; A. armata, of which the type has long leaves, while there is a short-leaved variety (A. a. brevifolia), a first-class plant with neat habit and masses of flowers; A. Drummondi has small Vetch-like leaves, and carries its flowers on spikes—where it does well it is one of the best of the Acacias; A. pulchella, a thorny, tangled plant, with single balls of flowers, is very pretty; A. hastulata is the latest to flower and is well worth growing.

Two uncommon foliage plants may be mentioned, Exoecaria bicolor, a small shrub bearing dark green leaves with brilliant crimson undersides, and Cyanara aurantiaca, a Coleus-like plant, the upper surface of the leaves being covered with deep violet hairs.

In conclusion, one berried plant may be mentioned, Damnacanthus indicus, which resembles in growth a dwarfed shrub, with tiny, Holly-like leaves, and bright scarlet berries; the creamy-white and green flowers are comparatively large; and one bulbous plant, Lachenalia Boundii, which produces immense spikes of brick-red flowers a month before other Lachenalias; six bulbs planted last autumn are already fifteen, with fifteen spikes. *William Lawrence, Burford.*

INDOOR PLANTS.

HIPPEASTRUM ADVENUM MAJOR.

The recent illustration and description of the above subject, which appeared in the issue of *The Gardeners' Chronicle* for October 27, 1928, solved a puzzle that I had been unable to elucidate for the past year. Prompted by a reference to Habranthus pratense I had made in a trade journal, E. O. Orpet, Superintendent of Parks at Santa Barbara, California, wrote me to the effect that he believed I had named for him a bulb he had been growing for years under the name of the Blood Lily. This bulb he stated, is grown extensively on the coast, as it is a prolific multiplier, rivalling some of the Daffodils. In all the years he had grown it, despite his excellent knowledge of botanical subjects—Mr. Orpet was at one time a noted gardener and Orchid grower in New Jersey—he had never been able to identify this red-flowered bulb, obviously related to the Amaryllis.

In due course (late summer), he sent me some bulbs, some of which I potted, the rest being planted out-of-doors. All flowered late last fall, when I at once realised they were only distantly related to Habranthus pratense. The bulbs out-of-doors did not survive the winter, while those in pots, having to be kept in an ordinary room, developed rather weakly foliage and consequently failed to flower this fall. In California the plants were flowering freely in mid-November.

I have no doubt as to the identity of this bulb, as Mr. Worsley's description and illustration, referred to above, so accurately fit. Johnson's *Gardeners' Dictionary* and Bailey's *Standard Cyclopedia of Horticulture* afforded no means of identification, the references being so brief.

I would not state that Hippeastrum advenum major is a brilliant subject, but it is undoubtedly worth more attention than it has apparently received. *T. A. Weston, New Jersey.*

HIPPEASTRUMS AT KENYA.

The beautiful Hippeastrums (Amaryllis) cultivated with such care and success under glass in England, are, writes Mr. W. F. Glencairn Campbell, grown out-of-doors (Fig. 10, p. 25) in Kenya Colony where they make a fine display and grow as freely and flower as finely as any wild flower. The illustration certainly suggests that Hippeastrums find themselves very much at home in Kenya Colony.

BERTOLONIAS.

These elegant plants, their beautiful leaves almost rivalling those of Anaectochilus, require a warm, moist atmosphere with shade from strong sunshine; they are best grown in comparatively shallow pans, well-drained and filled with a mixture of fibrous peat or finely-shredded Osmunda fibre, Sphagnum-moss, silver sand and crushed crocks. During the growing season a night temperature of 60° to 65° should meet their requirements, rising in the day time proportionate to the prevailing climatic conditions; as the plants are of procumbent and somewhat spreading habit, their receptacles may be shallow, but of sufficient diameter to allow for the plant's reasonable increase. Several small pans containing plants, plunged in a large pan of chopped Sphagnum-moss and sand, is a convenient method of growing them, and the treatment is, apparently, suitable to Bertolonias. Cuttings afford a ready means of increase.

Desirable species are B. maculata, Brazil, 1850, figured in *Bot. Mag.*, t. 4551; B. pubescens, from Ecuador; B. marmorata, Brazil, 1858; B. guttata, referred to Gravesia, from tropical America; B. Houtteana, in all probability of garden origin; B. margaritacea, from Brazil; B. primulaeflora, from Ecuador, and B. superbissima, a garden hybrid.

These interesting and elegant little plants commemorate A. Bertoloni, an Italian botanist.

Light fumigation will effectually check the depredations of aphides, which sometimes attack these plants. *R. A.*

ACACIA VERTICILLATA.

This is a dense-growing Wattle of considerable beauty for the cold greenhouse or for growing out-of-doors in really warm, sheltered gardens. Where it is at home, it will reach a height of eight feet or more in the open. The fluffy heads of sweetly-scented blossoms are freely produced amid the Conifer-like leafage. As with the majority of Acacias, a mixture of loam and peat gives the best results. In normal seasons some flowers will begin to open in the latter part of February, continuing until mid-April or thereabouts.

Few subjects are more satisfactory than Acacia verticillata for planting out in a border of a large conservatory, while in well-protected gardens, where hard frosts seldom occur, this Wattle might well be given a trial in the open border, against a wall, with every hope of success. *C. Turner.*

WINTER-FLOWERING ANNUALS IN AMERICA.

An important part of the work of every American gardener who has greenhouses in his charge is the growing of various annuals to keep up a supply of cut flowers during the fall, winter, and spring months, and, indeed, in some establishments they are also grown under glass during the summer to augment the supply from the open gardens.

Such subjects as Antirrhinums, Stocks, Mignonette, Calendulas, Candytufts, Trachymene coerulea, Larkspurs, Gypsophila elegans, Hunnemannia fumariaefolia and others of like nature, are cultivated to an extent which would surprise the British gardener, and the quality of the crops so produced far exceeds that of similar subjects as grown in Britain. It is largely the intensity of the winter light which makes possible and profitable the intensive cultivation of these annuals. Disbudded Calendulas, on stout stems from eighteen inches to two feet in length, look cheery and possess a very decided decorative value in midwinter. Stout spikes of Antirrhinums, three or four feet in length and in many delicate shades, are always welcome and useful, while Mignonette well-grown and disbudded, takes on a new aspect, and is hardly recognisable as the same subject which is grown out-of-doors in Britain.

Of course, the houses are designed specially to accommodate these crops, which are planted in beds either on the ground level or on raised benches, provided with suitable soil. The latter method appears to give the best results with most subjects (Sweet Peas being a notable exception), and this is especially so with those which are to bloom during November, December and January. Houses of light construction are naturally favoured, and some of the best greenhouse builders use steel for the framework, even the sills being made of this material; and the glass supports consist of a wooden core with a steel backing to give the maximum strength with the minimum obstruction of light. Houses built in this way are glazed with glass cut to a twenty-four by twenty-five-inch size. The benches are made of a kind of slate or soapstone, with tile bottoms, although most commercial growers, as well as many private places, use concrete or Cypress wood for this purpose. They are from five-and-a-half inches to seven inches in depth inside.

When preparing the benches it is usual to place a layer of well-rotted manure on the bottom and then to fill almost to the top with a good rich compost, which is pressed quite firm. The young plants are then planted from two-and-a-half-inch pots at a distance appropriate to their anticipated growth. Calendulas do best when allowed twelve inches each way, but they are ofttimes only given ten inches; Antirrhinums require at least ten inches each way. After planting, watering must be attended to periodically and the surface of the beds kept lightly cultivated. Antirrhinums, Mignonette, Stocks and Calendulas are disbudded and suitable supports furnished as they become necessary. Feeding with liquid manure and other stimulants requires attention as growth demands.

The plants are raised from seeds sown either directly into the small pots, or in flats, to be transplanted later. The former method is preferable for Lupins. Antirrhinums are sometimes propagated by means of cuttings, but I find that seedlings give the best results, although occasionally colour variations appear. Stopping is necessary to secure a desirable branched growth with Antirrhinums and Mignonette, but most of the other subjects may be allowed to branch naturally.

The majority of these annuals are seldom troubled with diseases or pests, except possibly aphis, which is easily kept in check, but rust is much feared on Antirrhinums, and for this reason extreme care is necessary not to allow moisture on the foliage, and to provide adequate ventilation. A species of black root-rot sometimes causes loss among the Larkspurs. *T. H. Everett, New York, U.S.A.*

CRAWFURDIA TRINERVIS.

Crawfurdia trinervis, which the Japanese call Tsuru rindo (Climbing Gentian), is a plant worthy to be added to the collection grown by Gentian lovers. It inhabits semi-shady woodland, where it climbs over the shrubs or creeps on the ground, provided the soil is heavy and fertile. In its native habitat, the plants growing in the sunny portion are poor compared with those in semi-shade, while the best specimens in my garden are those growing in a sunny spot.

The leaves are dark green, opposite, entire, ovate-lanceolate, and pointed at the tip; the leaves on the main stem are four inches in length, while those on the lateral shoots are smaller by one-third or more. The Gentian-like, pale, reddish-purple flowers open in the late summer, and are followed by the bright, purplish-scarlet fruits which appear before the corolla withers, and make the plant very attractive. After experiencing several frosts, the fruits become much brighter in colour and are retained far into the winter. Crawfurdia trinervis (Fig. 12), is not tidy in habit, but is easily managed in the shrubbery or edge of a woodland, because it is not vigorous in growth. Callicarpa mollis, a deciduous shrub bearing lilac-violet fruits in our vicinity, is sometimes used as a support for the Crawfurdia, and the association is a finely contrasting one.

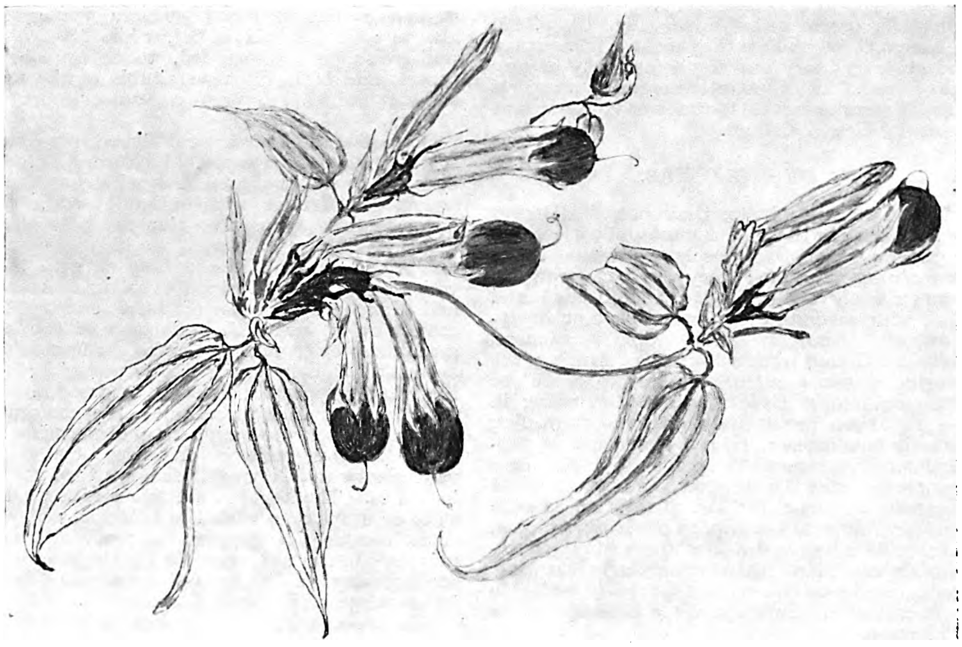


FIG. 12.—CRAWFURDIA TRINERVIS.

There are some Himalayan species of Crawfurdia, notably C. affinis and C. speciosa. *K. Yashiroda, Japan.*

ALPINE GARDEN.

SCABIOSA PTEROCEPHALA.

For planting in sunny crevices on the rock garden or rock wall, S. Pterocephala, from Greece, might well be employed, as it forms a close, spreading mat of soft, silvery-grey foliage, for which splendid character alone it is worthy of a place.

It is sometimes referred to in catalogues and other works as Pterocephalus Parnassi, but this name, under which it was once more generally known, has now been superseded by the one given above, although it is very distinct from the other members of the genus, the flowers being the only character typical of the Scabious. The sheets of foliage are, during July, and if the plant is happily situated, covered with large, short-stemmed, pale lilac-coloured flowers, borne in great profusion and very attractive, and they, in turn, give place to grey, fluffy seed-heads, which enhance the charm of this subject during the late summer and early autumn months.

S. Pterocephala is essentially a plant for sunny crevices, for if grown on the flat, where the rain can beat down upon it and its foliage become saturated, its health may soon be impaired and, by the end of winter, it will present a very sorry and bedraggled appearance, while it may even succumb completely. It should be planted in the warmest and sunniest position possible, where the roots may penetrate to a good depth between the rocks, in light, gritty, loamy soil, and under such conditions should last for many years, spreading with moderate freedom and becoming, with each succeeding year, an ever widening mat of undoubted charm.

Other than its natural exception to excessive dampness—a character general to silky-leaved plants—S. Pterocephala is quite hardy, while it may be propagated successfully by summer-rooted cuttings.

MARGYRICARPUS SETOSUS

Among the lesser-known subjects which might be planted more freely in alpine gardens and on rock walls is the evergreen bushling Margyricarpus setosus, from the mountains and cooler parts of South America, and a member of the Natural Order Rosaceae.

It should be planted in a crevice, in a warm position and loamy soil, so that the woody, trailing growths, closely packed with small, greyish-green and very finely-cut foliage, may hang in a bushy mat. The flowers are insignificant and of no account, but they are followed by large, white, pearl-like berries—from which character this subject derives its popular name of the Pearl-berry. When these fruits are produced plentifully, as they are during warm summers, the bushlings are very attractive, especially when hanging against well-weathered rocks.

It is very seldom that M. setosus is damaged by severe weather—excessive wetness is likely to prove more harmful to it and for this reason planting it in a crevice on the face of a cliff, or rock wall is to be recommended.

It may be propagated by cuttings, taken in summer (I find that short growths, removed with a "heel," provide the best material), and inserted in a bed of sand in a cold frame. These do not root so quickly as many subjects, and care is necessary with them at this stage, or the portion beneath the surface level may rot off. When rooted, they should be potted in small pots, in sandy loam, and grown on and wintered in a frame, planting them out, if rooted well, the following late spring. *M. W.*

TREES AND SHRUBS.

KALMIAS.

There is a distinctiveness and charm about the Kalmias which enables them to hold their own in spite of the great inrush of other Ericaceous shrubs. All but K. latifolia are quite dwarf (under four feet) and so amenable are they to garden culture that they will thrive in any good lime-free loam or sandy peat, the former being enriched, if deficient in humus, with some well-decayed vegetable matter. A fairly cool, or moist, root-run is essential to the best results and the drainage must, of course, be free. But the Kalmias are really very easily satisfied, and any soil that will grow Rhododendrons will suit them. A little thin shade from the mid-day sun is desirable, but not necessary when the moisture is sufficient. All are evergreen, with the exception of K. cuneata, which has only been re-introduced recently after having been lost to cultivation in this country for nearly a century. This species is probably less hardy than the others, since it comes from the Carolinas. At any rate, the only specimen I ever possessed did not stay long, and I have not been able to replace it.

The other Kalmias are natives of eastern North America, extending to the central states and into Canada. The species most familiar to our gardens is K. angustifolia, an extremely variable shrub ranging in height from a little bush of a few inches to about four feet. The glossy, bright green leaves, paler beneath, are more oval, or rounded, than in the others, and they are borne in pairs or threes. As this shrub suckers freely it makes rather a close thicket of its slender, upright branches. The flowers appear from about midsummer onwards at the tips of the growths and remain for several weeks, often to the end of the season. They are produced in dense clusters, rather more than two inches across, and are shallowly bowl-shaped, with the five angular lobes peculiar to all the race. They are rich rosy-red, with just a hint of blue, which prevents them being so pleasing as they might be. There is a variety, rubra, which has deeper-coloured blossoms, and another very delightful form, rosea, which earns its name since its blossoms are a lovely rose-pink. K. a. nana (pumila) is the Benjamin of the tribe, being only some six inches in height, and its comparatively large flowers are a clear rosy-red. Then there is K. a. ovata, whose leaves are broader and of a duller green than those of the type, with flower-clusters as in the last-mentioned. I must add, however, that K. angustifolia and its varieties appear to be in a state of considerable confusion regarding identity and nomenclature, the compilers of catalogues, and even authorities in botanical gardens, displaying very divergent opinions.

Although K. angustifolia suckers, it is not aggressive in that respect. With me, at any rate, it spreads very slowly and always keeps to a more or less self-contained clump. That being so, I do not hesitate to use it among choicer plants at the margin of the bog, or in cool beds with any of the smaller Gaultherias, Shortias, and the like. So much may also be written of K. glauca, which has a similar habit of growth. But this comely little shrub is finer in stem and leaf than the foregoing, and can at once be distinguished from the dwarfer forms of K. angustifolia by its much narrower leaves, the dark lustrous green of their upper sides and the very glaucous, almost white, under-surfaces. These leaves, moreover, are tapered and more pointed at both ends than those of the varieties mentioned, they are recurved at the margins and their stalks are pressed against the branch. K. glauca does not often exceed eighteen inches. It flowers prolifically, the blooms, which appear in April, and often to some extent in late summer, being borne in bold, terminal clusters. They are a deep saucer-shape, with the five lobes referred to, and of a vivid rosy-purple. This little shrub will do in almost any cool soil, even in the rock garden, but it is happiest where it receives ample moisture. In the Rockies I have seen it growing and flowering actually in shallow water at the stony margins of lakes, and there is no doubt but that it is by nature a swamp dweller. It is one of the most delightful of the smaller Ericaceous shrubs.

K. latifolia is not only the finest of the genus, but a shrub that must be accorded a foremost place among the choicest and most beautiful of all shrubs, not excluding Rhododendrons. In its native North America it varies in stature according to the location, being anything from four to twenty-five feet tall, but in this country the average height of well-matured specimens is from seven to ten feet, with a symmetrical, rounded form and a width about equal to the stature. There is a superficial resemblance to a Rhododendron in the habit of growth and in the leathery, smooth, dark-green, oval, pointed leaves, which are often nearly six inches long. The flowers, borne in large clusters at the ends of the twigs in early June, are about an inch across, the five-angled corollas being anything from a pale blush-tinted white, to a deep rose-pink. Even before the flowers open, K. latifolia is an attractive plant, with the vivid tints of its waxen buds against the rich and lustrous foliage, but a well-grown specimen in full bloom is an object of peerless loveliness and one possessed of a refinement of the rarest quality.

The most beautiful colour form of K. latifolia is, to my mind, a medium rose, keen and pure, which dies off in a shell-pink, rather than the white of the paler ones. These colour forms are not offered separately under name by the trade, presumably on account of this species being propagated from seeds. However, it is always well, when ordering K. latifolia, to specify the shade of colour required; it is still better to see the plants in flower in the nursery, for there is also a considerable difference in the size of the blooms and the truss. There is a variety, K. l. myrtifolia, with smaller leaves and a much dwarfer habit.

K. latifolia does very well in an average, lime-free loam that is well-drained and on the light side. Under such conditions, it is a long-lived shrub and flowers regularly. I know of one specimen, believed to be about one-hundred-and-fifty years old, which is still vigorous, and for the past forty years it has, to my knowledge, flowered abundantly every season. It is growing with the turf of the lawn up to its base and has never had any attention in the way of feeding.

The flowers of the Kalmias are worthy of more than passing notice, for the mechanism by which fertilisation is secured is ingenious. Thus the stamens, when the flower first opens, are bent back so that the anthers rest in the little cups which form the angular corners of the five-lobed corolla. If the stamen is touched, the anther being ripe and the day warm, it is immediately released and, with the action of a catapult, pelts the visiting insect (or one's pencil point) with pollen.

The Kalmias are propagated by seeds, division (or suckers) or cuttings. From all kinds which sucker it is often an easy matter to detach rooted growths, but as K. latifolia usually grows from one or more stout stems, which are not so apt to produce available suckers, it is increased from cuttings or seeds. The former are, of course, the more preferable where one wishes to perpetuate a good colour form, and they are not difficult to manage. A fair percentage should strike if four or five inch lengths of the young wood are taken in August, inserted in very sandy peat in a cold frame, and left covered by a bell-glass until the following spring. *A. T. J.*

TRACHYCARPUS EXCELSA.

The hardiest of Palms in this country is Trachycarpus excelsa, once a very popular subject and still very widely grown for the decoration of cool conservatories and winter gardens. In the south of England, and even at Kew, where conditions are often very severe and damaging to plants, Trachycarpus excelsa has withstood the winters of half-a-century, and suffered little or no damage, although often unprotected. In Cornwall and south Devon, the Chusan Palm is grown somewhat extensively in both public and private gardens, and quite considerable plantations of it were made in clearings in an Oak wood, at Bosahan, by the late Sir Arthur Vivian. It is the only Palm referred to by Mr. W. J. Bean in his *Trees and Shrubs Hardy in the British Isles*, and he states that established plants will withstand 32° of frost.

Trachycarpus excelsa deserves shelter from cold winds, and when so protected its elegant, long-persisting leaves are not discoloured or torn, and consequently form a distinct attraction, particularly to any part of the garden wherein the aim is to obtain a sub-tropical effect.

The popularity of this Palm—originally discovered in Japan by Siebold, who sent seeds to Leyden in 1830—is suggested by the numerous names it has received. In gardens, its most popular name is Chamaerops Fortunei, a reminder that Robert Fortune introduced plants to Kew in 1849, and with some of these the earliest experiments were made to test its hardiness, for at Kew it had previously been cultivated in the tropical Palm House. Other names include those of Chamaerops excelsa and Trachycarpus Fortunei. The example illustrated in Fig. 13 is growing in Mr. Gunther's garden at Tongswood, near Hawkhurst, Kent, a garden that was described and illustrated in *The Gardeners' Chronicle* during the second half of 1925. *B.*

SOPHORA TETRAPTERA.

This distinctive and very attractive shrub is usually grown on a south-west wall, and in spring its large racemes of yellow, Pea-shaped flowers are particularly striking; the racemes are axillary and pendulous. The leaflets, arranged in heavy, opposite pairs, are silky, densely so on old plants, and the species, in favoured localities, will attain a height of twenty or more feet. S. tetraptera was introduced from New Zealand in 1772.

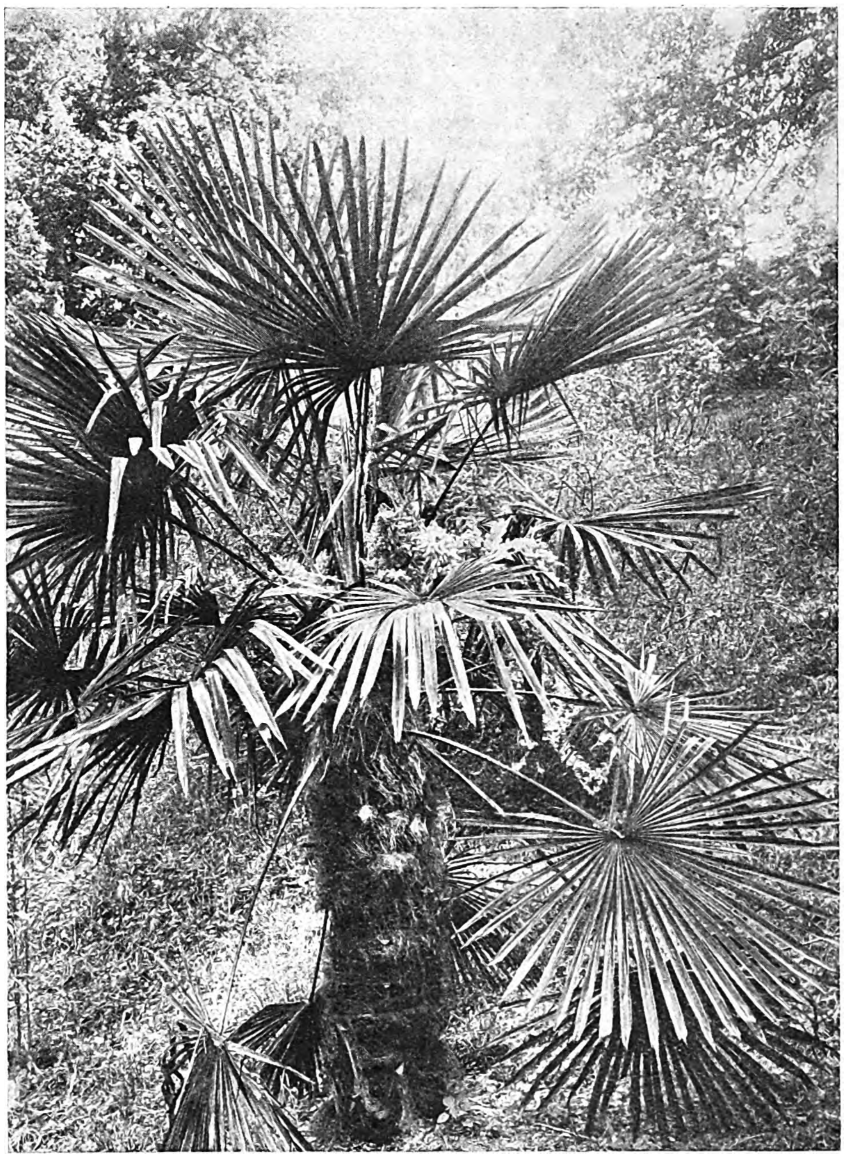


FIG. 13.—TRACHYCARPUS EXCELSA AT TONGSWOOD.

S. t. microphylla, the New Zealand Laburnum, is hardier than the type, and in mild localities will grow well as a bush, in addition to being an ideal wall plant; somewhat smaller of leaf and flower than S. tetraptera, it is otherwise very similar to it, and is figured, under the name of Edwardsia Macnabiana in *Bot. Mag.*, t. 3735, and as E. microphylla, t. 1442.

S. t. grandiflora, familiar to many as Edwardsia grandiflora, is a robust form requiring the favourable conditions appertaining to a south or south-west wall; this form is figured in *Bot. Mag.*, t. 167, as S. tetraptera.

These interesting New Zealand shrubs are easily propagated from cuttings in summer, and although of somewhat slow growth are always attractive; they thrive in a well-drained, loamy soil, enriched with humus, and respond to generous treatment. *Ralph E. Arnold.*

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LILIES IN 1928.

EXCEPT that the winter of 1927-8 stretched its tail to an inordinate length and crippled the June-flowering group, the Lily season of 1928 will be remembered as the best the south of England has enjoyed for many years. From the beginning of July onwards to the end of the autumn, the weather, on which everything depends, was generally and enjoyably fine in the south as distinct from the north; and although the want of rain made itself felt here and there on some of the higher, lighter land, a pleasant downpour on July 27 had a most refreshing effect, and there was enough water in the ground when the drought began in early July to last out. That, and the unfavourable spring, were the essential distinctions between 1928 and 1921. In the latter year the average heat of the summer months was a good deal in excess of that of last year, and the drought had made itself felt in all directions in the south by the end of July.

In a letter dated June 22 to a friend, I wrote: "The longest day has come and gone, and so far the season for Lilies is about the worst of the many bad ones I have known. Botrytis is everywhere, and if the sun does not shine soon the early and mid-season species will be spoiled. It is seldom that two hopeless seasons follow each other, so let us hope we may yet be spared that calamity. But the sands are running out."

Up to the end of June the season was so backward that the earlier-flowering group of Lilies was unusually delayed, and then, when the hot weather began, found themselves in bloom with the July-flowering group, which, in turn, was forced by the hot weather of the second week of that month. So we had the unusual spectacle of L. pomponium and L. Hansonii and the other "first earlies" in flower with L. croceum, L. Martagon and L. monadelphum. As is usually the case, too, in a fine summer, the normal gap between the July-flowering group and the early autumn species was bridged; and once again, the sun showed its power over botrytis, for by the middle of July all active trace of the pestilent fungus had gone.

Of the first few months of the year the story is one with which southern gardeners are familiar, for it has all happened before, although not, perhaps, in precisely the same sequence. During a short, warm spell at the end of February, Forsythia suspensa was in full bloom in Hyde Park, earlier than usual. Easter was delightfully fine, with warm southerly winds, and the next week was bitterly cold with icy winds from the north-east, snow and frost. On March 10 a severe frost reduced the bloom of early Rhododendrons to brown pulp, even in gardens within sight of the Channel. The frost was followed by a heavy fall of snow, which covered the south coast from the North Foreland to Cornwall; and next day the temperature at Kew Observatory was the coldest registered in March for thirty-six years.

On the other hand, there were the usual preludes to summer, which, with the wintry spells, go to the making of that composite picture—the English spring; and although the recollection of its asperities was not blotted out by the summer, the latter went far to soften the remembrance of one of the worst vernal seasons of the century. Happily, the blizzard and intensely cold spell which froze the south just after Christmas of 1927 did no harm to Lilies. None of them was showing above ground at the time, and although frost will cripple the young stem growths of Lilies, it does the bulbs no harm; in fact, as has been remarked before in similar notes, observation seems to show that they are the better for a freezing, even to balls of ice.

The pleasant rains of October were not enough to spoil the harvest of seeds, which seems, generally, to have been bountiful and should encourage amateurs to raise their own crops. American gardeners, who have lately taken to Lilies as eagerly as they took to Roses, Irises and Paeonies years ago, have been quick to appreciate the benefits of the propagation of Lilies from seeds, and with the help of illustrated leaflets issued by the United States Board of Agriculture, great numbers are now raised annually in this way in the United States. If British nurserymen do not look to their laurels, it may not be long before American-raised bulbs of Lilium regale are offered here at favourable prices. This species can be brought to marketable size in two years, by which time the bulbs should be of Walnut size, and it should be possible to sell such bulbs at 1s. apiece. It is true that, knowing no better, amateurs clamour for larger bulbs, but it is doubtful if these move so well as smaller bulbs. Experience seems to show that third-year bulbs of L. regale usually transplant more satisfactorily than those of greater age; a good deal depends, no doubt, on the season, on the method of handling, and the time the bulbs are out of the ground, but the fact remains that the original consignment of bulbs of L. regale which Wilson collected in China and sent home, made a fine show the following summer. But England is not China.

Although, perhaps naturally, they seem to have an extraordinary attraction for the unwary, large bulbs of L. giganteum are notoriously bad movers, and here again third year bulbs, which are usually about the size of a two-ounce hen's egg, are most satisfactory. It is the same with L. monadelphum var. Szovitsianum, and like L. candidum, that should be transplanted early in the season. L. Hansonii is one of the few species which may be lifted at almost any age, without apparent hurt. The roots of some Lilies seem to remain active even when the bulb is resting, and L. Henryi is an example, while in some others the roots are annual and perish so soon as the bulb goes to rest. The latter obviously transplant more happily than the former class, because they may be lifted without disturbance of the root system. The subject is one on which there is need for research, and pot-grown bulbs should assist the process.

Some Lily bulbs rest for prolonged periods, while others take hardly any holiday. L. candidum is the classic example of the latter, and that comparatively little-known species, L. Sargentiae, makes no move from the time it goes to rest in late October until the end of February, and may be kept all but bone-dry during that period. Yet bulbils of the species keep their leaves all through the winter; in fact, are evergreen! These are points which catch the eye of the observant grower, but they make conclusions difficult.

Having reached the time when but slight addition can be made to the list of known Lilies, it is pleasant to be able to write hopefully of F. K. Ward's pink Martagon Lily, No. 6,034 (*Gard. Chron.*, 1927, Vol. LXXXII, Fig. 55, p. 127), which has made further progress during the year, and should soon be in the hands of many amateurs. Visitors to Vincent Square will recollect the exhibits of this species sent by Lt.-Col. Messel from his garden at Nymans, where there has been a colony of it for two years, but no one would have supposed it capable of the growth shown in the photograph kindly sent to me by the Hon. H. D. McLaren (Fig. 14) of a remarkable young specimen grown in the open at Bodnant. As often happens with Lilies in cultivation and, particularly, with that florifer-

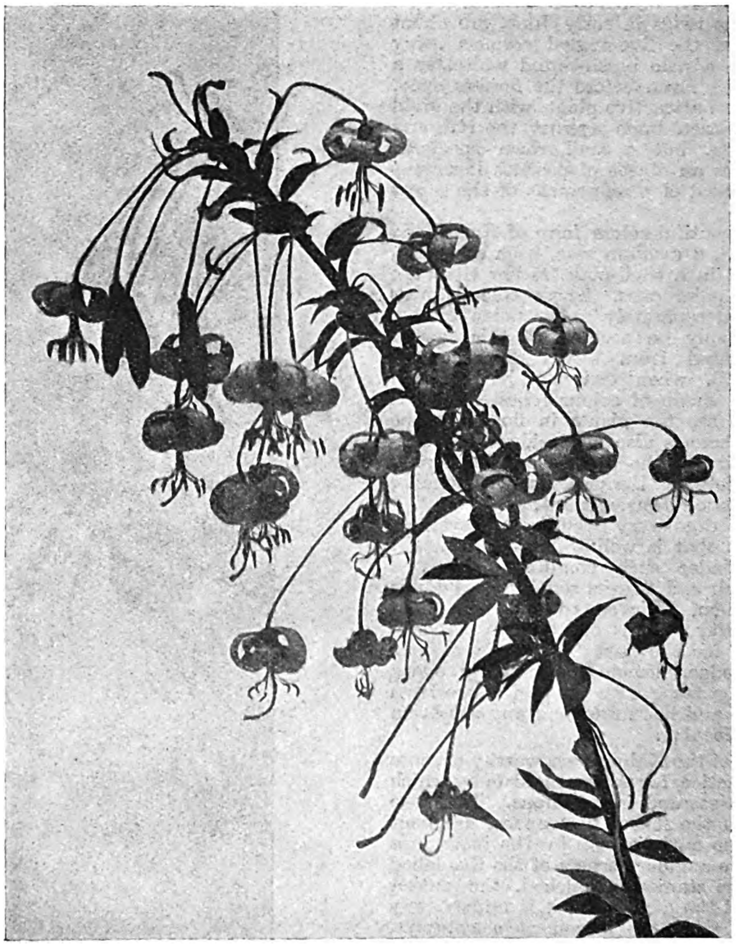

FIG. 14.—LILIUM SP., F. K. WARD, No. 6,034 AT BODNANT, 1928.

ous species, L. Willmottiae, the weight of flowers was evidently more than the slender stem of the specimen could comfortably support, and the photographer had either to make a record of the leaning stem or leave it. Those who know their Lilies will notice a certain general resemblance of the Lily in the photograph to the habit of L. Willmottiae, but there the resemblance ceases, for the plant is certainly new. At first Ward's Lily seemed to have some relationship with Franchet's L. taliense, but critical investigation showed it to be illusory. The species has still to be formally described and named, and as the name of the discoverer is as yet unattached to any Lily, the opportunity presents itself of paying him a graceful compliment.

This Lily has yet to prove itself a good garden plant, like L. regale for instance, and the fact should be borne in mind that Lilies with small bulbs like this rarely make satisfactory plants for general use. But the exception may prove the rule, and the species has two great virtues—a generous production of seeds and quickness of growth. It may be had in flower in the second year from sowing the seeds. Whether it is calcifugal or not remains to be proved, but the indications seem to show that it is not.

The same may certainly be stated of L. centifolium, which seems slow of distribution in this country, although American gardeners are cultivating it assiduously and successfully, both from seeds and by scale offsets, as the illustration (Fig. 15), kindly sent to me by Mr. Griffiths, of the U.S.A. Board of Agriculture, shows. The capsule is naturally large and holds hundreds of fertile seeds, with a moderate amount of chaff. I have watched some isolated specimens of this Lily for years, and as they never form seed capsules, one may conclude that it is sometimes self-sterile. In such cases, the stock may be increased easily by removing the outside layer of scales from the bulb and "sowing" them in a pan or pot. The removal of the scales can be managed by nimble fingers without lifting the bulb or doing it any harm. In the case of old bulbs, which may be so much as six inches in diameter, two or three layers of scales may be detached without harming the bulb.

In such a summer as that experienced in 1928, several Lilies which normally mope in our climate, come into their own, and so it was not surprising to find L. ochraceum making more than one appearance at Vincent Square, as well as L. sulphureum, which after a total eclipse in the wet summer of 1927 was in good form last year in many directions. There is a good colony of the former Lily in the garden at Logan, where, Mr. McDouall tells me, it is perennial, and where, incidentally, what must surely be a record head of L. japonicum, with nine blooms, flowered last summer. L. Wallichianum, too, made one of its furtive appearances last year. In our southern climate all these species, as well as L. philippinense and the varieties of L. auratum—Wittei, pictum, cruentum and rubro-vittatum, are best with a roof over their heads, as then one may see them in all the purity of their natural colouring, and that is wonderful.

During the year, a variety of L. auratum platyphyllum, called rubro-vittatum, flowered in several directions from bulbs marketed by the Yokohama Nursery Company. Whether this is rightly attached to L. a. platyphyllum or is a variant of the rubro-vittatum form of the type (L. auratum) is not clear; but, as grown here, it certainly lacks the broad leaves and bold habit of L. a. platyphyllum. For some hours after the bud has opened the rich chocolate colouring of the petal is very satisfying, but the tint is most fugacious. The variety seems no easier to keep than the other.

That elegant Himalayan species, L. polyphyllum, must be a stranger to the younger generation of Lily growers, although it was by no means rare twenty years ago. In those days it was usually to be found in one or other of the glasshouses at Kew, and Mr. Elwes, who knew the plant in its natural habitat, generally contrived to keep it going under glass. The writer, too, had a colony of it for some years in the open in his garden, from home-raised bulbs, and raised further stock from the seeds of the colony, which persisted until an enterprising mole tunnelled under the group and under an adjacent clump of that rare beauty, L. Bolanderi (Fig. 16), bringing each to an untimely end. Bulbs of L. polyphyllum reach this country from time to time from Darjeeling or Simla or Jeol kote, but they do not travel well and rarely recover from the ordeal. Seeds of the species, however, were included in the representative parcel of Kashmir seeds, sent last year to His Majesty the King by the Maharajah of Kashmir, and were distributed by the Office of Works; so, in a few years' time, we may hope to see L. polyphyllum in the flesh again.

During the year, Wright has investigated the common fungus disease of Lilies which is so prevalent in damp seasons, and has reached the conclusion that it is not Botrytis cinerea, as generally supposed, but a distinct and novel species, for which he proposes the name B. elliptica.* Ogilvie, too, who has done noticeable work in the investigation of the Bermuda Lily disease, has found that although the fungus botrytis was present in the Bermuda fields in damp seasons, it was not primarily responsible for the decay of the Lily industry in the island, an industry now happily resuscitated. The cause is to be found in a virus disease transmitted by a particular aphis, and possibly introduced to Bermuda from Japan.† A most important discovery. *A. Grove.*

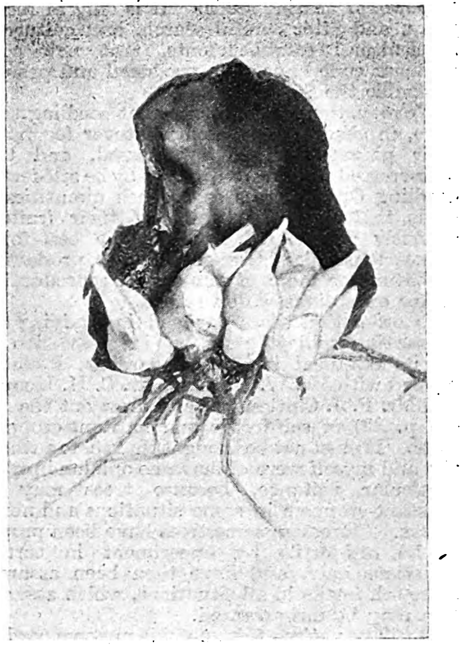

FIG. 15.—SCALE PROPAGATION OF LILIUM CENTIFOLIUM.

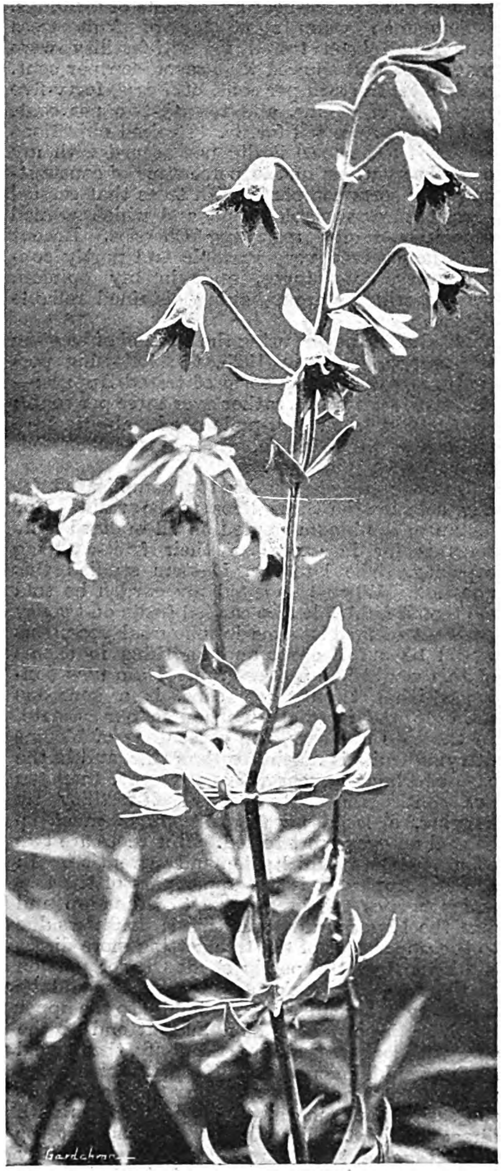

FIG. 16.—LILIUM BOLANDERI IN MR. A. GROVE'S GARDEN, 1914.

SELF-FERTILE, CONSTANT-CROPPING, AND SEEDLING FRUIT TREES.

IN KENT, SURREY AND MIDDLESEX.

THESE notes do not purport to be determinative. They treat of thirty-five years' experiment in one Middlesex garden of small size in which the number of seedling trees which could be grown to fruiting size was limited. But they throw some light upon the subject, and have been supplemented by similar observations from Kent and Surrey gardens.

There are two schemes which have been tried elsewhere. What may be called "the broadcast plan" was first put on record in the United States of America by Burbank, who, having access to big fruit farms in which hundreds of trees of each variety were grown together, collected quantities of seeds without discrimination as to male parentage. The scientific plan, on the other hand, necessitates the depollenization and bagging of the female, and the recording of the pollen artificially used for impregnation. Both schemes suffer from limitations. Burbank's scheme could only yield results of genetic reliability if seeds could be collected from the middle of a large area planted with only one variety of fruit tree. The scientific plan demands an amount of expert labour well suited to the activities of a subsidized horticultural establishment, but which is, if carried out on a large scale, beyond the compass of a single amateur unable to give his undivided attention to this work.

It therefore became a question of compromise to evolve a scheme which was both practical in operation and which would give some results of value. It was not possible to secure that practical immunity from chance cross-fertilisation which Burbank wished to secure from collecting seeds in the middle of a big area devoted to one variety of tree. But it is known that in general (and excluding races of garden mongrels which have for generations been crossed in all directions), flowers which are pollenated with "foreign" pollen fail to carry the normal number of seeds, and fruits containing less than the normal number of seeds will not swell to the normal size (the Citrus group furnishes some exceptions). On this basis it is clear that if fruits of extra large size and perfection were chosen, it would be tolerably certain that they had been either selfed, or pollenated from another tree of the same sort or species. Although there may still be an element of doubt here, yet, if from seeds so chosen, trees are raised which are indistinguishable from the female parent, the probability is that the female parent belongs to the class of self-fertile trees. For, even if we are confronted with the parthenogenic argument, yet trees which can reproduce themselves in this way are, for the gardener's purposes, self-fertile. This line of argument applies to Apples and Pears, but clearly not to stone fruits. I therefore worked on these lines, sowing only seeds from extra fine specimens of fruits chosen from but a very few of the best varieties.

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* "The Causal Parasite of the Lily Disease," by James Wright, B.Sc. *Trans. and Proc.* of the Bot. Soc. Edin., Vol. XXX, Pt. I (1928) p. 59.

† "A Transmissible Virus Disease of the Easter Lily," by Lawrence Ogilvie, M.Sc., M.A. *The Annals of Applied Biology*, Vol. XV, No. 4 (1928), p. 540.

Those who would criticise my methods should bear in mind that there is a fundamental difference between hybridising plants and trees grown for the sake of their flowers, and those grown for fruiting purposes. If one depollenates and hybridises the flowers of a fruit tree, there can be no assurance that the fruits which would naturally have been formed on the flowers selected would have been either specially well-flavoured or well developed. But by the method I have employed, both flavour and size had been determined without doubt. In the former case, one takes the risk of hybridising flowers on a spray which has some hidden defect in capacity for fruit formation; in the latter case there is the risk of a chance cross by inferior pollen. There does not seem to be any larger element of luck in one scheme than in the other.

Among Apples, I used Cox's Orange Pippin, Ribston Pippin, Improved Gravenstein, and Cellini; among Pears, Doyenné du Comice and Marie Louise; and among Plums, Coe's Golden Drop, Reine Claude de Bavay, Jefferson, Oullins Gage and Victoria.

QUALITY AND USE.

PLUMS.—Oullins Gage has the richest flavour among the earlier Plums grown here, and Coe's Golden Drop (including both seedlings from it), and Reine Claude de Bavay among the later kinds. My seedling Victoria is very sweet and juicy, but has not the aromatic qualities of the former three. But it has size, some fruits weighing four ounces, and many three ounces and over.

Among cookers, none can touch Belle de Louvain for richness. Czar and the old Winesour are also good, especially for jam-making. Damsons do not succeed here. For bottling it is useless to grow any Plum which does not possess considerable acidity in the skin. Non-acid Plums, when bottled, become maukish in a few months. The Cherry Plum (Myrobalan) is second to none, but does not succeed here.

PEARS.—None can compare with Doyenné du Comice, either in flavour or in the long period during which it remains ripe without decaying. Marie Louise and its seedlings come a good second. I have had fruits of the latter weighing up to nine-and-a-half ounces in the open. Although this delicious Pear is shown at practically every fruit show, it is never obtainable in shops. Uvedale's St. Germain is, perhaps, the best cooker. The soil here has long been known as suitable for Pears.

APPLES.—Cox's Orange Pippin and its seedlings are the highest flavoured. The old green-skinned Ribston Pippin is the next best if it is eaten off the tree, but when stored it loses much of its aromatic quality. I have two early seedlings of merit. A seedling of Newtown Pippin is unrecognisable as such. Among white-fleshed cookers, Keswick Codlin as an early, and Lanes Prince Albert as a long keeper, take a lot of beating. No small garden should be without Cellini, on account of its general utility and constant cropping characters.

SELF-FERTILE AND CONSTANT-CROPPING SORTS OF FRUIT TREES (see list on p. 33).

The characters of seedling trees depend upon the declared or latent characters of their parents, hence it is important to trace back such characters to the parents, wherever possible. But it is known that all classes of flora which have been propagated for many "generations" by non-sexual means, tend to lose their sexual virility. To such a marked extent is this true, in some cases, that Sugar canes which had been propagated by sets for a very long time had lost all power of bearing seeds. It is only in recent years, and after careful search, and culture in horticultural establishments, that new sorts of Sugar cane have been produced and promise to double the Sugar crop.

We may, therefore, assume that seedling trees have, in general, recovered whatever fecundity their parents originally possessed, and that near-crossed seedlings will generally be self-fertile. Seedling Orange trees carry such quantities of seeds, that the edible value of their fruits is seriously depreciated, whereas the best forms of nearly seedless Oranges are the product of a century or more of non-sexual reproduction. A few exceptions are on record.

In order that those engaged in studying this interesting subject may be in possession of results obtained in various gardens, I corresponded with Mr. W. Poupart, Mr. C. H. Hooper, and Mr. F. J. Chittenden, and drew out the list (on p. 33) of self-fertile and constant-cropping sorts. It must not be thought that these authorities and myself were of the same opinion in every particular instance, because trees may be constant-croppers in some situations and not in others. Moreover, some trees have been proved to be self-fertile by experiment in certain situations only, and have then been assumed to be self-fertile in all situations, which assumption may be unwarranted.

It will be noticed that, outside my own garden, few recent seedlings appear on the list, as such seedlings are not in general cultivation. But experimental growers will obtain from this list the characters of many well-known sorts of fruit trees, which some of them will use as female, or as pollen-bearing, parents of seedlings.

Seventeen years ago lists of fruit trees which had been tested for self-fertility were made out, and showed that seventeen per cent. of Apples, thirteen per cent. of Pears, forty-five per cent. of Plums, and twenty-two per cent. of Cherries were self-fertile. I raised objections to this list because it did not accord with my own observations of the percentage of constant-cropping sorts compared with trees that carried occasional or variable crops, and which seemed especially faulty regarding Cherries. Recent tests have given very variable and partly contradictory percentages, and, in my opinion, we are still far from having obtained reliable figures.

Mr. C. H. Hooper, using the method of bagging the sprays, gave, in 1925, the following percentages out of sixty sorts of tested Apples:—Self-fertile naturally, rather over three per cent.; self-fertile, when self-pollenated, about 18·5 per cent.; and fertile, when cross-pollenated, about eighty per cent.

But the problem is far too complicated for any solution on these lines to be valid. For instance, the bloom carried on all orchard fruit trees is far in excess of their fruit-carrying capacity. The late Dr. Masters studied this question. When he visited my garden he told me that if an Apple tree carried fruits on twenty per cent of its blossoms in a normal year, this would be a full crop, and anything in excess of this would be an over-crop. I am now convinced that twenty per cent. is a generous estimate and is rarely reached in our climate. In the case of Pears, the percentage of blooms carrying fruits is much less than this, and in the case of Plums is nearer five per cent. than ten per cent. Hence, to prove self-fertility by bagging, a large number of sprays must be bagged on every sort tested. But there are two other matters which demand attention. In orchard Apples, it is the upper part of the tree which carries the greater part of the crop and also the larger fruits, and this is doubtless due to the upper part of the tree getting more direct sun-light than the partly shaded lower portion of the tree. To make a fair test it would be necessary to ascend steps or a ladder to the upper branches in order to bag, and attend to the sprays under observation. Secondly, the bagged sprays would, in any case, suffer just those limitations to which the shaded part of a tree is subjected, inasmuch as the bag interferes with direct sunlight. Hence, it is obvious that the percentage of those Apples, whose self-fertility has been proved under these restricting influences, should be raised by some yet unknown factor.

Climatological causes have an incalculable effect in causing a reduction of a conceivably possible maximum crop to that actually realizable.

As to Marie Louise Pears, I have noted that, during the few days that the stigmas are ready for impregnation, a maximum day temperature of 60° or more was necessary for fertilisation. To the usual deficiency of day temperatures during the flowering period, I trace the erratic cropping of this excellent Pear. Apparently this is not due to any deficiency of active pollen at lower maximum day temperatures than 60°, but to some lack of receptivity of the female organs at lower temperatures. We should realise that the influence of climate may be predominant in deciding the question of fertility, and that in some cases the question of self-fertility and of receptivity to foreign pollen may occupy a relatively unimportant place, and be overborne by the factor of climate.

As a rough approximation of the percentage of self-fertile fruit trees, in some places and under optimum weather conditions, the following table may be of value, but much will depend on the locality and the sorts grown:—Apples, about 33 per cent.; Pears, from 10 to 15 per cent.; and Plums, from 30 to 40 per cent.; Cherries, only two varieties are constantly self-fertile, and two others in some degree; Peaches and Nectarines are typically self-fertile; Apricot Moor Park is self-fertile (no other sort has been tested); and Quinces are typically self-fertile.

It appears from the Apple list that all undoubted self-fertile sorts are also constant-croppers, and that my seedlings are all constant-croppers.

Four self-fertile Plums are listed as constant-croppers (p. 33). Among those Plums which only carry good crops at rare intervals in my garden are Jefferson, Coe's Golden Drop and its two seedlings, Oullins Golden Gage, all sorts of Damson, Prunes, Reine Claude de Bavay, Japanese sorts (four), and Cherry Plum.

It is not an ideal soil for Plums. They generally suffer from lack of moisture at the period of foliation, and often from excessive rain at harvest time.

Cherries do not succeed at Isleworth, and are not much grown in this district. Morello is an exception, and carried crops every year until Cherry cultivation was given up on account of shortage of ground.

No cooking Pear carries constant crops at Isleworth. Those sorts condemned in my garden were either small-fruited kinds of no particular merit, or ripened all their fruits within a period of a few days, and so were of no use in a private garden. Many sorts of Pears were condemned for this latter reason, although they may be suitable sorts for market purposes. This is a very good Pear soil. The list (see p. 33), is too short for any definite conclusion to be drawn as to whether self-fertility and constant-cropping are interconnected.

NOTES ON SEEDLING TREES.

PEARS.—About two-thirds of the Pears are valueless; some of these have too small fruits, some must all be used in two or three days as they have no keeping quality when once ripe. All of them possess some acidity, which is only pleasant when there is ample sweetness to carry it off, which is only the case in some seedlings. About three per cent. may be worth naming. Only one seedling was a dwarf tree on its own roots, and this is a very good-flavoured Pear.

I have had Marie Louise come true from seeds, but Doyenné du Comice has never done so, and its seedlings are unrecognisable. Seedlings come into bearing in twelve to eighteen years. The flowering period of most sorts of Pears extends over about twenty days. No account is taken of the second flowering period on new wood which sometimes takes place in June.

APPLES.—About half are worth growing. Their quality and size of fruit average about the same as their female parents, and their keeping qualities also. I have only one which is a rampant grower, and some are on the dwarf side. Two or more of Cox's Orange Pippin have come true from seeds, but Ribston Pippin and Newtown Pippin are unrecognisable. An improved Cellini is near its female parent. Besides the seedling Cox's Orange Pippin, I have raised two others of first quality—an early dessert

Apple and a very heavy, prolific cooker. Seedlings come into bearing in about eight years. The flowering period, being later than that of Pears, is often shortened by a spell of high temperature. In cool weather it is roughly about twenty days, or rather less.

PLUMS.—Most of them are worth growing. Their quality, size of fruit and height vary widely. Some carry small, Damson-like fruits, sweet in some cases and tart in others. Some are constant-croppers, others are as uncertain as their female parents. Some carry three flowers together, some carry a bunch of many flowers which one cannot separate with certainty, while others carry their flowers singly or in pairs. The self-fertile Victoria produced a self-fertile, very early-flowering, constant-cropping seedling, with larger and better-flavoured fruits. Coe's Golden Drop produced some seedlings of high flavour, uncertain croppers, and the like, but easily distinguished from, itself. Reine Claude de Bavay rarely carried fertile seeds. The seedlings of Oullins Gage and of Jefferson are so far unrecognisable. I have about four worth naming. My seedlings have not suffered to any extent from silver-leaf, and have come into bearing in from five to nine years.

I kept some in pots until flower-buds were seen, and then planted them out. These dwarfed trees have remained of dwarf growth ever since. Suckers of seedlings produce trees quite as good as the seedlings. The Pershore Plum has long been propagated in this way, and I have propagated seedling Victoria by suckers with success. The flowering period of Plums generally is two to four weeks, depending on temperature. No account is taken of the second period of flowering on the new wood in June.

LIST OF SOME FERTILE AND (OR) CONSTANT-CROPPING FRUITS.

APPLES.

Irish Peach	Self-fertile	Constant-cropper	C.-c. at Isleworth.
White Transparent	"	?	
Newton Wonder	"	Constant-cropper	
Ecklinville	"	"	
Summer Golden Pippin	"	"	
Beaumann's Reinette	"	"	
Peasgood's Nonesuch	"	"	
King of the Pippins	"	"	C.-c. at Isleworth.
American Mother	?	"	
James Grieve	?	"	
Early Victoria	Self-fertile	"	
Lane's Prince Albert	?	"	C.-c. at Isleworth.
Bramley's Seedling	?	"	
Stirling Castle	Self-fertile	"	
Ribston Pippin	?	"	C.-c. at Isleworth.
Rev. W. Wilks	Self-fertile		
Lord Derby	"		
Golden Spire	"		
Lord Grosvenor	"		
Christmas Pearmain	"		
Norfolk Beefing	?	"	
Cox's Orange Pippin	?	Uncertain crop	"
Improved Gravenstein	?		Uncertain at Isleworth.
Seedling of Irish Peach	Self-fertile		C.-c. at Isleworth.
Seedling of Cox's Orange Pippin (2)	?		"
Seedling of Cooker A	?		"
Cellini	?	Constant-cropper	"
Cellini Seedling	?		"
Seedling B	?		"
Seedling C	?		"
Newtown Pippin Seedling	?		"

PLUMS AND GAGES.

Victoria	Self-fertile	Constant-cropper	Good, but not constant crop at Isleworth.
Victoria Seedling	"	?	C.-c. at Isleworth.
Dennison's Superb	"	?	Not grown at Isleworth.
Early Rivers'	"	Constant-cropper	"
Bittern	?	?	"
Czar	"	Constant-cropper	C.-c. at Isleworth
River's Late Autumn Gage	?	"	Inconstant crop at Isleworth.
Winesour	?	?	C.-c. at Isleworth.
Myrobalan (both sorts)	Self-fertile	Uncertain crop	Fails at Isleworth
Monarch	"	"	Rarely crops at Isleworth.
Blue Rock	?		
Prince of Wales	?		
Warwick Drooper	?		
Early Mirabelle	Self-fertile		
Reine Claude de Bavay	?	Occasional crop	Rarely crops at Isleworth.
Guthrie's Green Gage	Self-fertile		
Early Transparent Gage	"		
Golden Transparent	"		
Pershore	"		
Purple Pershore	"		
Giant Prune (Burbank's)	?		
White Magnum Bonum	?		
Prince Englebert	?		
Oullins Gage	?		Rarely crops at Isleworth.
Goliath	?	Variable crop	Variable crop at Isleworth.
Rivers' Early Transparent	Self-fertile		
White Bullace	"		Not grown at Isleworth.
Gisborne's	"		

CHERRIES.

Morello	Self-fertile	Constant-cropper	C.-c. at Isleworth.
Florence	?	?	Not grown at Isleworth.
Flemish	?		" " " "
Late Duke	Self-fertile		

PEARS.

Duchesse d'Angouleme	Self-fertile	Uncertain crop	Condemned at Isleworth.
Colmar d'Ete	"	?	Not grown "
Beurré Bosc		Constant crop	C.-c. at Isleworth.
Easter Beurré		"	Not grown at Isleworth.
Hessle		"	Condemned at Isleworth.
Souvenir du Congrès		?	C.-c. at Isleworth.
Louise Bonne of Jersey		?	"
Conference	?	Fairly regular crop	Fairly regular crop at Isleworth.

APRICOTS.—Moor Park has produced seedlings true in all respects to the female parent, but more vigorous. It takes seven to nine years to reach the fruiting stage. The flowering period lasts three weeks, but blooms expanding after foliation has begun never carry fruits.

PEACHES AND NECTARINES.—I raised a first-class Peach from Alexander Noblesse, carrying fruits up to nine ounces, and a first-class Nectarine, carrying crops out-of-doors, from Violet Hâtive. About six years from sowing seeds should be allowed before fruits can be expected, if the seedlings are grown outside, but a year less under glass. Some are rampant growers which are difficult to accommodate on a wall. A few have a prolonged flowering period, which is a point of great importance for trees grown on walls without other shelter from spells of bad weather.

MULBERRIES.—It is not true, as has been asserted, that Mulberries do not reproduce themselves from seeds in England. My two trees occasionally bear fertile seeds, but the seedlings are very difficult to transplant.

TRANSPLANTING.—If strong-growing, seedling trees of all kinds are replanted about every second or third year, they will come into bearing sooner, and their height and the space they occupy will be lessened.

PRUNING.—In their juvenile state, the proper method of pruning is quite different from that suitable to fruiting trees. As there are no fruiting spurs, no spurring back should be attempted. But every year some juvenescent (barren) boughs nearest the ground should be cut off flush with the main stem. Seedlings cannot be "got into shape" until flowering branches are visible.

GRAFTING.—Most gardeners detest the irregular appearance of seedling fruit trees growing upon their own roots, and class them as wildings. I have had a few seedlings grafted or budded upon dwarfing stocks so as to economise room. As one would expect, these grafted trees were not so lanky as the original seedlings, and, in the case of Apples, carried a larger crop for the size of the tree. But there was no difference either in the size or quality of the fruits.

DEPTH OF ROOTS.—In this naturally porous soil, which has had all its clayey content washed out by centuries of cultivation, it has never been necessary to root-prune any fruit tree. On the contrary, the difficulty is to obtain enough roots at a certain depth so that the trees should not be crippled by drought at the period of foliation. Hence, it is probable that, in this garden, seedling trees on their own roots will outlive grafted trees, and will carry better crops in years of late spring droughts. This is a matter worth consideration for those whose orchards are situated in a zone of severe spring and summer drought, such as occur in many continental areas.

PESTS AND DISEASES.

It is known that hard-fruited Apples suffer least from maggot, and that soft-fruited kinds, such as Keswick Codlin, suffer most. But there are some moderately hard kinds which suffer sadly from maggot, and in some seedlings the same comparative immunity or special susceptibility is noticeable.

American woolly aphis also shows partiality to certain sorts of Apples, and will occasionally ruin seedling trees when they are only in their second year of growth.

Seasonal influences are of great importance. During the heavy summer rains of the war years, woolly aphis practically disappeared from my garden, but reappeared during the comparatively dry summer of 1928. Heavy thunder-rains in April and May are adverse to the Apple maggot. The season of 1926 was unique in my experience at Isleworth, inasmuch as there was an almost complete failure of the Apple crop. As a result, there were scarcely any Apples in which the maggot could develop and in 1927 we had a record Apple crop with scarcely a bored fruit to be found.

The methods of combating these pests are well-known, but cannot always be put into operation at the proper season in small gardens in which labour is limited.

One occasionally finds Pear midge, but it is easy to eradicate if taken in time. Wasps and the blue tit are not so easy to deal with. Plum maggot has never assumed serious proportions since the destruction of Pond's Seedling, which sort is specially susceptible. Isleworth is in the middle of the silver-leaf district. I believe that the endemic character of this disease is due to the expense of digging up old, diseased Plum stocks. Summer pruning will also spread the disease by the knife or other instrument made use of. But to cut off a diseased bough and tar the stump will generally suffice. On the other hand, if the disease is from the stock it cannot be combated. I have a case of a seedling Plum becoming diseased, but it is very rare. Gummosis in Apricots has puzzled us all.

CONCLUSIONS.

The time given to raising seedling Apples and Plums is not wasted, even if it cannot be called profitable. But with Pears it is another matter. They take twelve to eighteen years to fruit, are mostly rampant and straggling growers, and few are as good as their parents.

From an economic standpoint the raising of seedling fruit trees is not likely to prove remunerative. The main difficulty is not the time required to bring the seedlings to the fruiting stage, but the prolonged after-period, covering a whole lifetime, during which a named seedling has to struggle before it can obtain recognition in our markets as a standard sort. Until this recognition has been accorded, its fruits cannot be sold at any reasonable price. Fruits, other than Apples, suffer from uncertainty of crop. It is not possible for a small grower to continuously maintain the labour and equipment necessary for handling a good crop, which may only come once in six or seven years. Yet, if he does not do so, the raiser cannot improvise the equipment or obtain the labour enabling him to market a big crop when the occasion arrives. Hence, those politicians who, before the war, advised us to "grow more fruit," were addressing philanthropists, and not searchers for profitable enterprises. Still, we must remember that the great majority of named Apples and Plums now grown or imported into Britain were raised as seedlings in our country in years gone, by when the condition of affairs was not so adverse to the grower. *A. Worsley, Isleworth.*

MESEMBRYANTHEMUM.

(*Continued from p.* 493, *Vol. LXXXIV.*)

PUNCTILLARIA, N. E. BR.

P. Purpusii, N. E. Br. (*continued*)—Mes. nobile, Purpus in *Monasschr. f. Kakteenkunde*, 1907, p. 23 and 25, with fig., and in *Mollers Deutsche Gartn. Zeit*, 1911, p. 386 and 387, with fig., not of Haworth. M. magnipunctatum, Schwant. in *Zeitschr. f. Sukk.*, 1926, p. 160, not of Haworth.

Willowmore Division: Near Miller, Frith. Marloth 6,831.

Described from living plants. It is one of those I mentioned in *The Gardeners' Chronicle*, 1926, Vol. LXXX, p. 213, under P. magnipunctata, as being cultivated under that name. Its leaves, however, are usually less stout and more acute, and the long, slender, white bases of the petals give the flower a distinct appearance.

P. magnipunctata, N. E. Br.—To this should be added as a synonym, P. compacta, L. Bol. in *S. Afr. Gardening*, 1927, p. 326, f. 12, which bears no resemblance to P. compacta, N. E. Br. (=M. compactum, Ait.), and is merely a small form of P. magnipunctata.

P. optata, N. E. Br.—To this, I think, must be referred the plant wrongly identified with Mesembryanthemum canum, Haw., and figured as P. canum by Mrs. Bolus in *S. Afr. Gardening*, 1927, p. 326, f. 14. For the true M. canum, Haw., see under Bijlia.

BIJLIA, N. E. BR.

Perennial succulent, stemless or tufted. Leaves opposite, obliquely and clavately trigonous, strongly keeled, whitish. Peduncle not exserted from between the leaves, 1–3-flowered, bracteate. Flowers pedicellate. Calyx subequally 5-lobed. Petals 2-seriate, free, cuneately linear. Stamens numerous, in an erect column, exposed to view to their base. Stigmas 5, filiform. Ovary inferior, 5-celled; placentas on the outer wall of the cell. Capsule shortly and broadly obconic, flattish, with raised sutures on the top, with 5 valves and cells; valves of expanded capsule inflexed and separating but slightly from one another, not spreading; expanding keels small, slightly prominent, about half as long as the valve and without marginal wings; cells acutely roofed with slightly stiff cell-wings, with acute depressions between the ridges, and the opening nearly closed by a large tubercle. Seeds several in each cell, ovoid, pointed at one end.—N. E. Br. in *Journ. of Bot.*, 1928, p. 267.

A monotypic genus, native of South Africa.

The name is given in honour of Mrs. D. van der Bijl, who has very kindly sent to me specimens of this and other novelties. This genus is distinct in appearance, but more nearly allied to Cerochlamys than to any other genus.

1.—B. cana, N. E. Br.—Plant 1½ inch to 2 inches high, forming clumps. Leaves opposite, in 1–3 pairs to a growth, incurved-spreading, and as received, 9–18 lines long, 4–6 lines broad and 3–4½ lines thick at the base, and 5–9 lines broad and 4–8 lines thick near the apex, where the keel is dilated, clavately and often obliquely trigonous, obtuse, not toothed, flat on the face and often on one of the sides, the other side being (or sometimes both sides are) convex, strongly and usually obliquely keeled on the back, with somewhat sharp angles, firm, glabrous and smooth, whitish or whitish-green, not shining. Cymes 1–3-flowered, with the peduncle not visible. Bracts 1½–3 lines long. Pedicels 1–5 lines long. Calyx-lobes about 2½ lines long, lanceolate or ovate. Corolla 12–15 lines in diameter; petals numerous, about 6–8 lines long and ¾–1 line broad, cuneately linear, obtuse or notched at the apex, yellow. Stamens about 4 lines long, yellow. Stigmas 5, as long as or exceeding the stamens, filiform. Capsule as described for the genus, when closed 3–4 lines in diameter, and scarcely more when expanded, as the valves separate but slightly and remain inflexed, with the openings between them only ½–1½ line wide (not widely spreading as represented by Mrs. Bolus). Seeds ¼ line long, smooth, light brown, with a darker point.

N. E. Br. in *Journ. of. Bot.*, 1928, p. 268. M. canum, Haw., *Obs.*, p. 158, *Misc. Nat.*, p. 25, *Synops*, p. 219, and *Rev.*, 86, not of Salm Dyck, Berger nor Marloth. M. Tugwelliae, L. Bol. in *Ann. Bol. Herb.*, Vol. I, p. 129, and *Journ. Bot. Soc. S. Afr.*, 1927, t. 3., f. 6. Hereroa Tugwelliae, L. Bol., *Mes.*, p. 50–51, t. 20, and p. 143. Juttadinteria Tugwelliae, Schwant., in *Zeitschr. f. Sukk.*, 1926, p. 184. Bolusanthemum Tugwelliae, Schwant. in *Gartenwelt*, 1928, p. 514, and see also p. 644 under Bijlia.

Prince Albert Division: Among rocks near Prince Albert. Mrs. Tugwell, Mrs. D. van der Bijl. Introduced into cultivation at Kew by Masson in 1792, but soon died out.

Living specimens of this very neat and distinct-looking plant were sent to me by Mrs. D. van der Bijl early this year, and I at once recognised it as being the long lost M. canum, Haw., and also as the plant Mrs. Bolus has figured and described as M. Tugwelliae without having identified it with the plant Haworth described as M. canum in 1795, and which soon died out of cultivation, and appears not to have been refound for over 120 years.

Mrs. Bolus, however, as mentioned under Punctillaria optata, has wrongly identified a Punctillaria as being M. canum, Haw., which is quite incomprehensible, for the species of Punctillaria have dull, greyish-green or brownish-green leaves that are conspicuously-dotted, never "hoaryish" nor yet at all like "stunted toothless leaves of M. caninum." Haworth makes no mention of dots, and he certainly would have done so if they had been present. His description is as follows:—"Plant apparently stemless. Leaves 2 inches long, crossing each other in pairs, hoaryish (*i.e.*, whitish), subacinaciform, rather hard to the touch and turgid; triquetrous, compressed, attenuate from the middle downwards; sharply keeled; keel hunching out towards the point, which is roundish, with a sharp keeled edge. The full-grown leaves resemble the stunted, toothless leaves of M. caninum exceedingly." This description exactly accords with Bijlia cana. and as M. canum was discovered by Masson, who certainly collected in Prince Albert Division, it may even have been found by him in the same general locality as that from which Mrs. Tugwell and Mrs. van der Bijl obtained it.

Mrs. Bolus has placed the plant under the genus Hereroa, to which it bears no resemblance. And Schwantes, apparently without having seen the plant, first places it in the genus Juttadinteria, where it does not belong, and after I had already published the genus Bijlia, founded the genus Bolusanthemum for its reception, possibly unaware that there is already a well-known genus called Bolusanthus, with which it would probably be confused. And later, in *Die Gartenwelt*, 1928, p. 644, he appears to want to chop the poor plant in half and call each half a different species, since he states that the plant I have described is not the same as that Mrs. Bolus has described and figured as M. Tugwelliae! A view that no one who has seen the plant is likely to endorse. *N. E. Brown.*

(*To be contiuued*).

THE GENUS PRIMULA.

(*Continued from p.* 15.)

INDOBELLA (Balf. f.). Bhutan P. (Bella.)

A BEAUTIFUL dwarf, densely tufted plant, considered to be a sub-species of P. bella, with short stolons bearing rosettes of smooth, somewhat thick, spathulate leaves about three inches long, tapering to a long, strap-shaped stalk; margins furnished with regular lobes which terminate in recurved teeth. Flower stem smooth, about half-an-inch long, bearing a solitary deep blue blossom. Corolla somewhat fleshy, about three-quarters-of-an-inch across, concave, divided into five broadly wedge-shaped, deeply bifid, spreading lobes; tube about a quarter-of-an-inch long, downy outside, with a dense tuft of white hairs in the throat. Flowers in July.

It grows in the Bhutan Himalayas.

Culture: As for P. bella.

INGENS (W. W. Sm.). Majestic P. (Nivales.)

A very attractive, robust perennial species with a stout rootstock emitting numerous thick roots. The rosette of smooth, pallid, somewhat thin leaves have lance-shaped or oblong-lance-shaped, blunt or pointed blades which taper to a narrowly-winged stalk, in all from ten to thirteen inches long and two inches wide; margins entire or obscurely toothed; upper surface smooth, underside sparsely sprinkled with yellow meal. Flower stem two-and-a-half to three feet tall, densely covered with yellow meal upwards, stout, erect, bearing one, or at times two, superposed umbels of many fragrant blossoms, varying from sky-blue to lavender-blue and purple, with a grey eye. Corolla nearly one-and-a-half inch across, divided into five egg-shaped or rounded, entire lobes; tube about five-eighths-of-an-inch long, funnel-shaped, with a distinct ring in the mouth. Flowers in June.

Grows in alpine meadows on the banks of streams, in Yunnan, on the Mekong-Yangtse Divide, at 14,000 to 15,000 feet above sea level.

Culture: Grow it in good, rich, fibrous loam, in a damp, half-shady spot.

INTEGRIFOLIA (Linn.). Entire-leaved P. (Auricula-Rhopsidium).

A very beautiful species from the Alps of Europe, with a rosette of narrowly elliptic or oblong, somewhat pointed or blunt, nearly stemless leaves, three-quarters- to two-and-a-half-inches long, with quite entire, non-cartilaginous margins, fringed with minute hairs; both surfaces sparsely covered with minute, colourless glands. Flower stem one-and-a-half to two-and-a-half inches tall, glandular, bearing an umbel of one to three rosy-lilac, rarely white, blossoms. Corolla broadly funnel-shaped, three-quarters-of-an-inch to one-and-a-quarter-inch across, divided into five heart-shaped, cleft lobes; tube three-eighths-of-an-inch to three-quarters-of-an-inch long, slightly longer than the calyx, cylindrical, dilated upwards, densely glandular. Introduced in 1792. Illustrated in *Journ. Roy. Hort. Soc.*, Vol. XXXIX, 1913.

Grows on the high alpine moorlands of the Pyrenees, Switzerland and Western Austria.

Culture: Good loam and peat, in a half-shady spot, should suit it. *A. W. Darnell.*

(*To be continued.*)

HOME CORRESPONDENCE.

Apple Scab.—I think Mr. Brown (Vol. LXXXIV, p. 497) will find that the trees which are comparatively free from scab are those which are on the under vigorous side. Conversely, trees that are growing vigorously are most liable to the disease. I find that I get most scab where the trees are growing freely and producing large fruits as a result of rather too much nitrogenous manure. For similar reasons, I find that trees in grass suffer less from scab than those in cultivated land. It is not unlikely that there is some hope of gaining a certain degree of immunity from this disease by means of more balanced manuring than has been the custom in the past, notably in the increased use of potash fertilisers; but definite results are not to be expected until annual dressings have been given for two or three years. With regard to spraying, I wonder whether Mr. Brown gives his first application just before flowering. I have had very much better results since I have given the first spraying at the pink bud stage instead of just after the fall of the bloom. The trees want a thoroughly good dose of Bordeaux mixture or lime-sulphur at that time. Unless one can prevent the appearance of scab on the first leaves, there is little hope of a good control; but if the leaves are healthy for a fortnight after flowering, it is an easy matter to secure a large proportion of clean fruits. I do not remember what reply I gave to Mr. Brown's note last April, and hope I have not merely repeated myself. *Market Grower.*

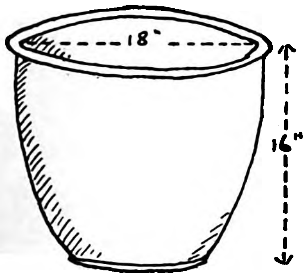


FIG. 17.—SOIL STERILISATION: THE COPPER.

Early Fruition of Fruit Trees.—In your issue for December 8, (Vol. LXXXIV, p. 456), Dr. H. E. Durham, writing of the "Early Fruition of Fruit Trees," states that on looking up the experiment of an old horticulturist, it was interesting to note a quick way of inducing seedling trees to fruit. As a boy, I remember my father experimenting on fruit trees, with the idea of accelerating their fruiting, and of dispensing with the labour of grafting as ordinarily practised in the case of Pears and Apples. This method consisted of transplanting the seedlings every year, each time cutting away the tap root, and in conjunction with liberal culture, this treatment caused the formation of fruit buds in the third or fourth year from sowing. He asserted that the labour of transplanting was far less than that involved by the raising of the necessary number of stocks and the grafting. Unfortunately, illness prevented him from continuing these experiments just as he seemed to be reaping the reward of his labours, as the trees were then very promising. As the root stock question for fruit trees seems to be receiving considerable attention at the present time, I think the above may be of some interest to anyone experimenting with fruit trees. *H. Howard Grace.*

Vegetables Under Glass.—At this time of year the Melon pits are empty and can be utilised for vegetables. Along one side come in order Rhubarb, Endive, Chicory, *i.e.*, Belgian Witloof, Chicory, excellent both in salad and braised; "Udo" (Aralia cordata), a favourite Japanese vegetable, eaten like Seakale and, finally, Seakale itself, which is, however, never so good as the Seakale bleached in the open in spring. All these vegetables are bleached by excluding light by means of Potato sacks spread over a light wooden frame. The temperature is kept round about 55° to 60°, which exactly suits the Asparagus on the other side of the pit. Asparagus is one of the most profitable vegetables to force, and the supply is merely limited by the number of crowns that can be spared. Asparagus here is always grown from seeds and pricked out, and the third year transferred to the beds, but it was only last year that I learned from Mr. F. J. Chittenden that the yield could be doubled by planting male plants only; this is a practice which obtains in America. This year we are trying two new strains: Glory of Brunswick and Scheekopf—"Snow Head," a self-blanching Asparagus. Asparagus is usually blanched by heaping sand on the crowns, but in Holland inverted pots are placed over the crowns so soon as the soil cracks. *William Lawrence, Burford.*

Soil Sterilisation.—I have read with great interest the splendid articles regarding soil sterilising in your recent issues, but being one of the "small fry," I am venturing to send you the notes of the method that I have adopted for many years past with every success. The cost of my "plant" is about one hundred pence—not £100. I have enclosed rough drawings to enable you more clearly to understand what I mean. I bought an old, rusty, but sound iron copper (Fig. 17) for 1s., which held ten gallons. The village blacksmith made me a stand or holder (Fig. 18); the ring is one-and-a-half-inch by a quarter-of-an-inch, and the three legs are one inch by three-eighths-of-an-inch. The ring is made to allow the copper to be lifted in and out easily. A piece of strong sheet iron (Fig. 19) was fitted in the bottom of the copper and it just cleared a measured gallon of water; a number of quarter-inch holes were drilled in the plate. By means of a few bricks, I make a fire-place, with the aid of an old piece of iron grating, and place some old sheet iron around the legs of the holder, leaving a space for feeding the fire. I place the apparatus in an out-of-the-way place and light a fire, using wood and coal; put a gallon of water below the grid, and fill the copper with the soil to be sterilised, being careful not to press it down. I bury a Potato two inches deep in the centre of the soil, place a piece of sheet iron on top, and keep a good fire going for forty to sixty minutes, and when the Potato is done to a turn, I lift out the copper (with some help), empty out the soil, let the copper cool a little, put in another gallon of water, and start again. In this way we do six "cookings" in a day, which gives quite a useful heap of first-class material. The soil must, of course, be neither too wet nor too dry when used.—*L. J. Moore (gardener to Col. F. E. Allfrey), Ivy Cottage, Sherington, Newport Pagnell.*

——I have read with great interest Mr. Falconer's article on sterilisation, although the subject is not new to me by any means, for it is more than twenty years since I first started sterilisation of soil, with such excellent results that I fail to understand why it has not become more generally adopted. I do not quite agree with Mr. A. Falconer that the method of steam sterilisation is the simplest, least costly and most satisfactory. Everyone is not so fortunately situated as to be able to draw steam from an existing boiler. To erect a thorough steam steriliser for a large establishment would cost a hundred pounds, and that in itself debars its general use. In my humble opinion steaming is too complicated to become general, whereas nothing could be more simple than baking, as a garden boy can manage this job. If Mr. A. Falconer will refer to *The Gardeners' Chronicle* of November 5, 1927, he will find a brief note on soil sterilisation. We sterilised everything used for potting purposes—leaf-soil and manure. Our garden boy got quite an expert at the job, and he frequently asked the foreman if he wanted any soil baked! *John Butler, Rose Cottage, Kidlington.*

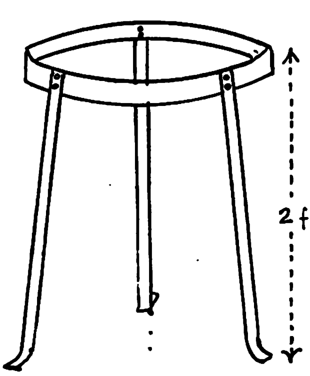


FIG. 18.—SOIL STERILISATION: THE STAND.

Eomecon chionantha.—It would appear, from Sir William Lawrence's interesting letter in your issue of December 18, 1928 (p. 478), that unwittingly in writing of this plant (p. 428), I conveyed the impression that the English equivalent of "Poppy of the Dawn" should be substituted for the Greek Eomecon. This was not my intention, as no one is more aware of the disadvantages involved in using English names for plants than the writer. To those of us who know a little Greek a name such as this presents no difficulty, but, as one coming in contact with many amateurs and gardeners without even a rudimentary knowledge of that language, I find that words from the Greek appear to present greater obstacles than those from the Latin. I know that "Eomecon chionantha," easy to some of us, is a pitfall for a goodly number of flower-lovers, hence my remark, which I did not intend to imply that I preferred the English equivalent. Writing, as I did, from a gardening point of view, I wanted to stress the point that this botanical name prevents the plant in question from being appreciated by the many. I am in entire accord with Sir William Lawrence's plea for simpler nomenclature, and hope the forthcoming Conference will do something to make things easier for the many who love their flowers, but whose lack of knowledge of Latin or Greek prevents them from the full enjoyment of their flowers and gardens. *S. Arnott.*

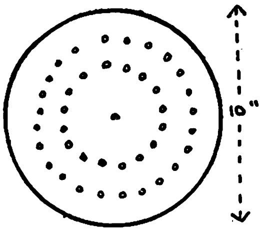


FIG. 19.—SOIL STERILISATION: THE GRID.

Buddleia Davidii v. B. variabilis.—From what I can see of it, B. variabilis var. Veitchiana, sent out as a novelty by the firm of Messrs. J. Veitch and Sons in 1903, could not be considered as the type, B. Davidii of Franchet, seeing that the latter was described in 1887 (see Vol. LXXXIV, pp. 456 and 496). In a live state, it was introduced from St. Petersburg about that time, but it was a very poor, semi-prostrate form not worth cultivating. The variety Veitchiana was not collected until 1901, and both that and the variety magnifica are infinitely superior to the original introduction. B. variabilis was described by W. B. Hemsley from seven specimens collected by Dr. Henry in 1887, or about that time, and from a specimen collected by Faber. These specimens represented some very extreme forms in the matter of foliage, but they were connected by intermediate gradations. The description of B. variabilis was published partly in 1889 and partly in 1890. As this Buddleia has been planted far and wide it will not be easy to change the name now. *J. Fraser.*

Apple Ribston Pippin.—There is a note in your issue of December 15, 1928, referring to the original tree of this Apple, and in that note your correspondent (*E. C. M., Streetly, Staffs.*), remarks, *inter alia*, that he has heard, with some authority, that Ribston Pippin comes true from seeds. I should like to know exactly what he means by this. Does he mean that it always comes true from seeds, that it occasionally comes true, or that it is fertile to its own pollen? And, further, it would be interesting to know from whose authority he makes the statement. In the case of my recent introduction, Saltcote Pippin, this fruit, although a seedling from Ribston Pippin, bears little resemblance to the seed-parent, although there are certain traces.

Unfortunately, its pollen-parent is not known, but most of the experts who have inspected it find evidence of Cox's Orange Pippin, both in its appearance and flavour. I have never bred with Ribston Pippin myself; it would be of much interest if any of your readers who have done so would give us some information bearing on the remarks of your correspondent. *F. Herbert Chapman, Rye.*

VEGETABLE GARDEN.

ONIONS.

THE arrival of the new seed catalogues reminds one that the time has come for preparation for seed-sowing, and one of the first vegetables to be considered is the Onion, especially if required for exhibition purposes. It is unnecessary to state that only the best seeds of the best varieties are any good for this purpose, and, indeed, the best seeds for all kinds of vegetables are not only more reliable, but cheaper in the end. Therefore, procure your seeds from a reliable source, and sow them so early in the New Year as possible. To obtain fine Onions that will keep well, a long season of growth is necessary, and this is especially essential in the northern half of the country, and where the soil is cold and heavy.

In preparation for sowing the seeds, some clean pans or boxes should be crocked carefully, some rough material being placed over the crocks to facilitate good drainage. Prepare a compost of two parts loam, one part leaf-soil, half-a-part old Mushroom bed manure, and half-a-part coarse sand, and sift the whole through a quarter-inch-mesh sieve. Thoroughly mix it, and then fill the pans or boxes to the surface, making it firm. Carefully select the best seeds and sow them thinly, covering them with about an eighth-of-an-inch of soil, and pressing the surface down fairly firmly. Water them with a fine-rosed can, cover with a piece of glass and paper, and place them in a temperature of 60°.

The young seedlings should soon appear, when the glass may be removed, and the receptacles placed on a shelf as near the roof-glass as possible. So soon as the seedlings are large enough to handle, they should be given a shift. Some growers prefer boxes about fifteen inches long, a foot wide, and four inches deep, and these are excellent because they may be moved about easily. The soil for this transference may be the same as advised for the seed-sowing, only sifted through a coarser sieve, and a little fine bone-meal added may be of benefit. The boxes should be clean and crocked carefully and some rough leaves or turf placed over the crocks. Fill them nearly full with soil, which should be made fairly firm, and then carefully lift the young plants from the seed pans and prick them out about two inches apart. The roots of these young Onions are very long, and great care should be taken not to break them. I am convinced that a great deal of the after success with Onions is due to careful pricking out, as the plants commence growth so much quicker if the roots at this stage are not damaged. When all are pricked out, water them in and place them in a vinery or Peach-house in which the vines or trees have been started into growth, and place them as near the roof-glass as possible. Take care not to over-water them, but rather give them a syringing overhead with tepid water, especially on bright days. Under such conditions they should make rapid progress and soon be ready to move into a slightly heated frame, where they may be given fresh air as the weather allows, guarding, however, against cold winds. Keep the surface soil stirred with a pointed stick, and apply water only when necessary. As time goes on, and the young plants become stronger, they may be removed to a cold frame and gradually hardened off, ready for planting out.

Another excellent method, and one which I tried last season, is to prick the seedlings straight out into a frame having a three-inch hot water pipe running all round. About three or four inches of prepared soil was placed on a bed of coal ashes, and made very firm; when finished, the surface of the bed was about six inches from the glass. The seedlings were then carefully pricked out about three inches apart, and well watered in. For the first fortnight or so the plants were syringed overhead in the early afternoon, and the frame kept closed. The soil was occasionally stirred and more air was admitted as the weather conditions allowed. As spring advanced, the lights were removed during warm days. Under this treatment it was found that the plants made remarkable progress. I was able to lift each plant with a good ball of soil, and they all grew away freely directly they were planted out.

Regarding the site for the Onion beds, it should always be in an open, sunny position, and should, if possible, be trenched, or double dug before the old year is out. A good dressing of well-decayed farmyard manure should be dug in both the bottom and top spit, and thoroughly well mixed with the soil. If one has time to trench the site, any decaying garden refuse may be placed in the bottom of each trench, and if the soil is heavy, the rougher the material incorporated the better, as this will tend to keep the soil open and provide drainage. The Onion resents a stagnant soil, and good specimens cannot be secured unless the ground is well prepared. Leave the surface as rough as possible and, when the plot is finished, give it a good dusting with soot. The winter rains will wash this in, to the ultimate great benefit of the plants. Some time early in March, when the surface is fairly dry, fork the bed well. The drying winds usually experienced at that period help to break the surface soil up ready for raking over in preparation for planting. About the first or second week in April is a good time for this latter operation, provided the weather is not wet.

The bed should be trodden well to make it firm if the surface is dry and friable, and then raked over with a small iron rake until a fine tilth has been produced. Procure some long boards and place them in a row up one side of the bed. At a convenient distance in front of this stretch a garden line from end to end, and all is ready for planting. The plants will by then have been hardened off, and should be sturdy and strong. Lift each one carefully from the box or frame, securing as much soil as possible with each, and plant them with a trowel, taking care to make a hole large enough for each ball of soil to fit in without cramping. Press each one in firmly so that the base of the plant is slightly below the surface, or just deep enough to keep it upright. It is a great mistake to plant Onions too deeply. Rake the ground neatly after each row is planted and, when the whole is finished, lightly water the plants in with a rosed can—better still, water every three or four rows as the work proceeds, as it is better not to tread on the bed more than is necessary. About a foot or fifteen inches apart is a very good distance at which to plant Onions, both in the rows and between the plants, and if the bed is a wide one, a path should be left up the middle by missing a row, thus making it much easier to get at the plants for watering and other cultural operations. If the weather should prove showery at this time no other attention is necessary, beyond hoeing the bed occasionally with the Dutch hoe to keep the surface open. If the ground has been well prepared, as advised, there should be no necessity for very heavy watering, especially if the summer proves a moist one. If, however, the weather is hot and dry, the plants should benefit greatly from good soakings of water, and a daily syringing overhead, preferably during the afternoon in time for the foliage to become dry before night. Soft water, or that which has been exposed to the sun, is the best to use; on no account use cold water from a main supply or well, as this will encourage attacks of mildew. An occasional watering with diluted liquid manure, and during showery weather a dusting around each bulb with some approved fertiliser, should help to produce fine bulbs, but, on the other hand, over-feeding should be guarded against, or the bulbs will become thick-necked, and will also not keep well. Frequent hoeings between the rows are advisable to preserve a friable, open surface, and also to keep weeds in check.

The bulbs should be carefully gone over as they attain size, and any loose skin removed. So soon as the bulbs have finished growing in the autumn, the tops may be bent over, doing two rows at a time, and turning the tops inwards, and after awhile the bulbs may be lifted with a fork and allowed to remain for a few days with the soil attached. In three or four days' time remove the soil and trim the roots off with a sharp knife; if the tops are sufficiently ripe, take these off also. Place the bulbs on an open staging in a cool house or frame where they may ripen thoroughly before being stored. They should be handled carefully at all times, or they will be bruised and so rendered useless.

Onions for kitchen and other uses are best grown on firm, good soil which has been well dug and manured. A good plan is to sow the seeds thinly in shallow drills, in a frame placed on an old hot-bed, in some good, friable soil. Keep the frame closed after watering the seeds in, and cover it with some light material until germination takes place, then gradually admit air and light as the weather permits. So soon as the plants are large enough to handle they may be planted out carefully in rows about one foot apart, allowing six inches between the plants. Water them in well if dry weather prevails, and during their season of growth keep the bed well hoed. Dust the beds occasionally with old soot, preferably during showery weather. Care should be taken to ripen the Onions properly, after which they should be stored in a dry and frost-proof shed, on open shelves, so that air can circulate freely among them.

Winter Onions are really autumn-sown Onions, which stand out-of-doors all the winter, hence the name. Seeds should be sown in a warm border in August, in ground that has done duty for early Potatos. This should be made firm, and the seeds sown in drills one foot apart. They should soon germinate and, when the seedlings are well through the soil, they should be dusted with some old soot, and the ground between them stirred with the hoe. The stronger the plants, the better will they withstand severe weather. A little rough leaf-soil strewn about them should help them to come safely through severe frosts, and in March they should be planted out one foot apart on well prepared ground and, if required for early shows, should be fed liberally and kept clean.

Pickling Onions may be sown during April on any good ground, in drills about six inches apart, the seedlings being thinned out to give them room to develop. Small, firm bulbs are the best for this purpose. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

THE MARKING OF IMPORTED ROSE TREES.

AN application was recently made by the Horticultural Trades' Association and the British Rose Growers' Association to the Standing Committee appointed under the Merchandise Marks Act, 1926, for Agricultural and Horticultural Produce, asking for an Order in Council that each imported Rose tree should be marked, both at the time of importation and when exposed for sale and sold, by means of a lead or zinc label, stamped with the indication of origin and attached to the "collar" of the Rose tree. It was expressly requested that Rose stocks should be excluded from the scope of the Order.

The applicants were represented on the enquiry by Counsel, Mr. C. G. L. Du Cann, instructed by Messrs. Ralph Bond, Veitch and Bilney, the solicitors for both the Associations. Evidence was given in support by Messrs. Courtney Page, Cutbush, Merryweather, Cook, Murrell, McGredy and Paton. It was stated on behalf of the applicants that no separate statistics of imports of Rose trees into the United Kingdom are available, but that the imports are estimated to amount to approximately 4,000,000 trees per annum. Practically all of these are imported from near European countries.

The Committees have now made their report, in which they state that these imported trees are, as a rule, less suited to the conditions of this country than those which are raised at home; that the ordinary purchaser, in that absence of marking, would not be able to distinguish between home-grown and imported Rose trees, although an expert generally would be able to do so; and that, as it is already a common practice to label Rose trees at some stage before reaching the ultimate purchaser with the name of the variety, a requirement of marking with an indication of origin would involve but little additional trouble or expense.

The Committee were informed on behalf of the retailers that they would not object to a marking Order, provided the marking of each individual tree was required on importation, so that retailers would be called upon only to continue the indication of origin which had been applied before the trees came into their hands.

The Committee add that after hearing the evidence, they are of opinion that there are no special circumstances which would render necessary an Order for marking on importation, as distinct from an Order for marking on exposure for sale and on sale. On the whole, however, they think there may be some advantage in requiring marking on exposure for sale wholesale, as well as at subsequent stages. It is possible, if not probable, that the effect of requiring marking on exposure for sale and on sale wholesale, as well as on exposure for sale and on sale by retail, will be that arrangements will be made within the trade for the marking to be done before the trees are exported from the country in which they are grown.

The Committee have accordingly recommended that an Order in Council should be made prohibiting the sale or exposure for sale, wholesale or by retail, in the United Kingdom, of imported Rose trees, unless each imported Rose tree bears an indication of origin. The Order should state that it does not extend to Rose stocks.

As regards the form and manner of applying the indication of origin, they recommend that the indication of origin should be legibly and durably marked either (1) on a metal or wooden label securely attached by wire or other metal fastening to the collar of each Rose tree; or (2) on a metal band clasped round the collar of each Rose tree. Section 10 (1) of the Act prescribes the indication of origin to be given in each case, and provides that the indication shall be conspicuous.

The report states that the Committee see no reason to delay the operation of an Order in Council beyond the period prescribed in Section 2 (8) (b) of the Act, and accordingly suggest that the Order should come into force three months after it is made.

It is very satisfactory that the efforts of the Horticultural Trades' Association and the British Rose Growers' Association for the protection, not only of British Rose Growers, but also of the public as purchasers of Rose trees, should have met with such gratifying results.

LAW NOTES.

FRAUDS ON NURSERY FIRMS.

BEFORE the Horsham Bench, at Horsham Town Hall, on December 28, 1928, a man who had given the name of Thomas Arthur Moore, but whose real name was stated to be Douglas Ludwig Fardoe, was charged on remand with obtaining, by means of fraud other than false pretences and contrary to Section 13 (1) of the Debtor's Act, 1869. The firms so imposed upon were Messrs. Wheatcroft Bros., Gelding, Notts., to the amount of 40s.; Messrs. David Fleeman and Son, Scorton, Darlington, to the sum of £2 17s. 6d.; and Messrs. L. A. Chamberlain, South Wigston, nr. Leicester, on three separate occasions, to the total amount of £6 7s. 6d. The prisoner pleaded guilty to all the offences.

Mr. C. G. L. Du Cann (instructed by Messrs. Ralph Bond, Veitch and Bilney) prosecuted.

Counsel stated that the prisoner was charged with nine offences, but that he proposed to withdraw four of these as further enquiries had brought forward evidence that possibly these were committed by the prisoner's father (who was himself serving a sentence of imprisonment), and to proceed on the five charges above only.

The prisoner's frauds had been perpetrated by the defendant obtaining lodgings in various localities under false names, and in those names ordering goods from nurserymen without having the slightest intention to pay for them. The names he had used were Fox, Henderson, Thompson, Fardoe (or Phardo), Knight and Moore, and he had had addresses in Ealing, Brondesbury, the Isle of Wight, Littlehampton and Crawley, from each of which he had absconded without paying. Prisoner had given a great deal of trouble, but in the long run a warrant was obtained for his arrest, and when the officers went to execute the warrant, prisoner escaped through the bathroom of the next house. He was ultimately found, through the vigilance of Superintendent Beacher and his officers, at Merstham, in Surrey, where he was arrested. On being arrested, the prisoner made a statement which would be given in evidence. The five offences charged against the prisoner did not by any means represent the whole of the frauds, which were widespread, but the prisoner had apparently calculated that he might safely continue his practices and that individual nurserymen would not prosecute so long as they were only swindled of small sums. In the aggregate, however, the sums obtained by the prisoner from the trade were considerable, and they were obtained in many cases from small traders who could ill afford to lose them.

Mr. Harry Wheatcroft, a member of the firm of Messrs. Wheatcroft Bros., Nurserymen, of Gelding, Nottinghamshire, gave evidence that on November 11, 1928, his firm received a communication signed "T. Moore," containing an order for twelve standard Rose trees and promising remittance on receipt of the goods. The goods were despatched and receipt was acknowledged by prisoner, who ordered another twenty-four Rose trees at the same address. The firm's suspicions were aroused, and they caused enquiries to be made. In response to Counsel, Mr. Wheatcroft said that his firm would not have given either credit or goods had they been aware that the prisoner was using a false name.

P.C. Draper, an officer stationed at Crawley, said that, acting under instructions, he kept the residence of the prisoner under observation. On December 19, he saw a young lady leave the prisoner's house with Rose trees. He followed her. She went to Merstham, in Surrey, where she met the prisoner. The constable then arrested the prisoner and said he was going to take him back to Crawley. The prisoner said he wanted to know more about this. The warrant was read, and he was cautioned, to which he replied: "I think this firm have an audacity to take this action over such a small amount." At the Police Station, he made a further statement (which was produced) in which he said the firm had the audacity to place the matter in the hands of the Police without writing to him for the money. Superintendent Beacher stated that the Defendant, on December 20, 1928, made the following voluntary statement to him after being cautioned:—"My name is Douglas Ludwig Fardoe. I am heavily in debt, and had goods from firms but I could not pay, so I absconded. I have a mother and sister to look after, which I have been trying to do. My hope is to go to sea, and to try and get on my feet to pay my debts. This statement has been read over to me, and it is true."

At this stage of the proceedings, the prisoner intimated that he desired to plead guilty, and to be dealt with by the Magistrates, instead of being sent for trial. Counsel thereupon recalled Superintendent Beacher, who outlined the history of the prisoner, and stated that since the early part of the year 1928 he had been obtaining a livelihood chiefly by defrauding nurserymen of their goods.

The Bench, after retirement, sentenced the prisoner to twelve months imprisonment with hard labour—the maximum imprisonment for this class of offence—being four months on the first charge and two months on each of the other charges, the sentences to run consecutively. Council invited the Bench to commend the Officer in charge of the case, as, but for his vigilance and promptitude, the prisoner would have succeeded in eluding justice. The Bench instructed that its commendation should be notified to the Chief Constable.

SOCIETIES.

YORKSHIRE FLOWER SHOW AND GALA.

THE annual meeting of the above Association was held on January 1, and the arrangements for the flower show and gala in 1929 were fully discussed. It was decided to hold the next show on Tuesday, Wednesday and Thursday, June 18, 19 and 20, and every endeavour will be made to create a show of outstanding merit. The schedule of prizes is now in course of preparation, and copies will be available to all applicants to the Gala Secretary, Assembly Rooms, York, in the course of a week or ten days.

NATIONAL CHRYSANTHEMUM.

THE last meeting of the Floral Committee for 1928 was held on December 31 at the Royal Horticultural Society's Hall, Westminster, and the following awards were made.

FIRST CLASS CERTIFICATE.

New Year. V. 1. a.—A very handsome and showy Single variety, with two rows of broad, substantial florets. The colour is a very pleasing shade of orange-bronze, enhanced by the yellow zone round the disk. Shown by Mr. H. SHOESMITH, junr.

COMMENDATION.

Bronze Conquest. II. 1 b.—A Decorative spray variety of soft bronzy-yellow colour. It is a sport from Crimson Conquest. Shown by Mr. H. WOOLMAN.

The variety Rosabelle, a wide-petalled, deep purplish-rose Single variety, shown by Mr. H. SHOESMITH, junr., the Committee desired to see again.

Obituary.

Charles Dixon.—In the Victorian period, the gardens of Holland House, Kensington, were well-known to the public, as the Royal Horticultural Society held its annual show there in July for several years in succession. Hence the exhibition became known as the Holland Park Show. During these shows, many of the older generation of gardeners and nurserymen became acquainted with Mr. Charles Dixon, the venerable gardener there, who retired about ten years ago, and passed away on the 6th inst., at his residence, Oak Villa, Kent House Road, Sydenham, at the great age of ninety-five years. Mr. Dixon had a remarkable career, having been gardener at Holland House for fifty-five years. Forty years ago, the late Lady Holland left him a pension of £50 a year. Twenty years ago, the late Lord Ilchester left him another pension of £50 a year. Hence he has had two pensions for many years. At the age of eighty-two, Mr. Dixon married his second wife, who predeceased him three years ago. Mr. Dixon was for many years a member of the Floral Committee of the Royal Horticultural Society and remained so until he was ninety years of age. *W. B. G.*

ANSWERS TO CORRESPONDENTS.

FREESIA FOLIAGE MOTTLED.—*B. S.* The cause of the mottling of the foliage of the Freesias received is at present unknown. It may be safely stated that the trouble is not due to a fungus, but whether a virus is responsible or whether the trouble is due to some physiological factor, we cannot say. Work is being carried on in connection with this disease. Flowers are produced on plants bearing mottled foliage, but the plants become weakly and tend to die off by the end of the growing season. Remedial measures are unknown, but it will be a good plan to discard bulbs of plants bearing streaked foliage.

Communications Received.—W. A.—A. T. J.—M. W. A. G.—R. F.—W. G.—G. F. W.—A. A.—S. A.

MARKETS.

COVENT GARDEN, Tuesday, January 8, 1929.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the day in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in the day.—Eds.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum, per doz. ...	10 0–12 0
—elegans ...	10 0–12 0
Aralia Sieboldi	8 0—9 0
Araucarias, per doz.	30 0–40 0
Asparagus plumosus ...	12 0–18 0
—Sprengeri ...	12 0–18 0
Aspidistras, green ...	16 0–60 0
Aspleniums, doz.	12 0–18 0
—32's	24 0–30 0
—nidus ...	12 0–15 0
Cacti, per tray, 12's, 15's ...	5 0—7 0
Chrysanthemums, white, per doz.	18 0–24 0
Crotons, per doz.	30 0–45 0
Cyclamens, per doz.	24 0–36 0

	s. d. s. d.
Cyrtomiums ...	10 0–12 0
Erica gracilis, per doz. ...	24 0–30 0
— — 60's, per doz.	12 0–15 0
— — 72's, per doz.	6 0—8 0
—nivalis, per doz.	24 0–36 0
— — 60's, per doz.	12 0–15 0
— — 72's, per doz.	6 0—8 0
Nephrolepis in variety ...	12 0–18 0
—32's	24 0–36 0
Palms, Kentia	30 0–48 0
—60's	15 0–18 0
Pteris in variety	10 0–15 0
—large, 60's ...	5 0—6 0
—small... ...	4 0—5 0
—72's, per tray of 15 ...	2 6—3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	18 0–21 0
—cuneatum, per doz. bun. ...	12 0–15 0
Anemone, St. Brigid, per doz.	6 0—9 0
Arums (Richardias), per doz. blooms ...	9 0–12 0
Asparagus plumosus, per bun., long trails ...	2 6—3 0
—med. sprays	2 0—2 6
—short „ ...	— 1 0
—Sprengeri, bun. long sprays...	2 0—2 6
—med. „ ...	1 0—1 6
—short „ ...	0 6—1 9
Camellias, white, per doz. blooms	2 0—2 6
Carnations, per doz. blooms	3 6—5 0
Chrysanthemums—	
—white, per doz. bunches ...	30 0–36 0
—white, per doz. blooms ...	3 6—9 0
—yellow, per doz. blooms ...	5 0—8 0
—bronze, per doz. blooms ...	5 0—8 0
—pink, per doz. bunches ...	30 0–36 0
Croton leaves, per doz. ...	1 9–2 6
Daffodils, single, doz. blooms...	1 6—2 0
Fern, French, per doz. bun.	10 0–12 0
Forget-me-nots, per doz. bun.	12 0–15 0
Freesias, white, per doz. bun.	3 6 4 0
Heather, white, per doz. bun.	9 0–12 0
Iris tingitana, per doz. blooms	5 0—6 0
Lilac, white, per doz. sprays ...	6 0–10 0
—mauve, per doz. sprays ...	6 0–10 0

	s. d. s. d.
Lily-of-the-Valley, per doz. bun.	18 0–36 0
Lilium longiflorum, long, per bun.	8 0—8 6
— — short, per doz. blooms	8 0—9 0
—speciosum rubrum, long, per doz. ...	5 6—6 0
— — — short, per doz. ...	3 6—4 0
Marigolds, per doz. bun. ...	6 0—7 0
Myrtle, green, per doz. bun.	1 6—2 6
Narcissus, Paper White, per doz. bun.... ...	6 0—8 0
—Grand Primo	6 0—8 0
Orchids, per doz.	
—Cattleyas ...	18 0–30 0
—Cypripediums	8 0–12 0
Prunus triloba, per bunch ...	4 0—5 0
Roses, per doz. blooms—	
—Mme. Butterfly	12 0–15 0
Smilax, per doz. trails ...	4 6—5 0
Tulips, per doz. bun—	
—white ...	18 0–24 0
—yellow ...	24 0–36 0
—red	18 0–27 0
—pink	24 0–36 0
—terra-cotta ...	24 0–36 0
—mauve ...	36 0–48 0
Violets, Prince of Wales, per doz. bun.... ...	5 0—7 0
French Flowers—	
—Acacia (Mimosa), per doz. bun.	12 0–15 0
—Marigolds, per pad	8 0—9 0
—Narcissus, Paper White, per doz. bun.	5 0—6 0
—Soliel d'Or, per doz. bun. ...	5 0—6 0
—Roses, Safrano, per pkt. 24's	3 0—3 6
—Violets, Parma, large, per bun.	8 0–10 0

Remarks.—The return of colder weather has been responsible for much shorter supplies throughout this department during the past few days, and all white blooms are now increasing in value. Lilium longiflorums have suddenly become scarce, and the present prices are the highest realised for some months past. Arums (Richardias) are again back to the prices realised during Christmas week, while Carnations are limited in quantity and prices are on the up grade. The best blooms of Roses Madame Butterfly and Sylvia are from home-growers. Daffodils are gradually increasing in quantity, especially Golden Spur, several boxes of which have been received from the Spalding district. Supplies of Tulips are increasing, and they are greatly appreciated. Some good quality blooms of Narcissus Grand Primo and Soleil d'Or have arrived from Guernsey. The present weather conditions having checked the supply of single Violets, many orders could not be fulfilled this morning. White and mauve Lilac and Prunus triloba are now arriving in excellent condition.

In the French flower department supplies are likely to become much shorter during the next few days, owing to severe weather in France. Paper White Narcissi and Violets were below requirements this morning. A few blooms of Rose Ulrich Brunner are arriving from this quarter in excellent condition, while a few mixed Anemones De Caen realised 2/6 and 3/- per bunch to-day.

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Cox's Orange Pippin, doz....	4 0—6 0
—Bramley's Seedling	10 0–16 0
—American—	
—Jonathan ...	10 0–12 0
—Spitzbergen...	9 0–10 6
—Nova Scotian—	
—Ben Davis ...	21 0–24 0
—Starks ...	22 6–25 0
—Golden Russet	25 0–35 0
—Baldwin ...	22 6–27 6
Apricots, South African ...	6 0—7 0
Bananas, per bun.... ...	22 6–33 0
Dates, dry, in cartons ...	4 6—5 6
Grapes, English—	
—Alicante ...	1 6—3 0
—Gros Colmar	1 9—3 0
Grapes, Almeria, shallow, per barrel ...	9 0–10 0

	s. d. s. d.
Grape Fruits—	
—Honduras ...	— 16 0
—Jamaica ...	— 14 0
—Florida ...	20 0–22 6
—Dominica ...	— 13 0
Lemons, per case—	
—Messina ...	12 0–25 0
Nuts—	
—Brazil, cwt....	— 90 0
—Chestnuts, Italian, bag	10 0–15 0
— —French, „	6 0–10 0
Oranges—	
—Almeria, case	18 0–32 0
—Jaffa ...	16 0–18 0
—Denia ...	14 0–30 0
Pears, Winter Nelis ...	14 0–18 0
Pineapples, case	20 0–35 0
Plums, South African—	
—Methley ...	4 0—8 0
—Beauty ...	5 0—8 0
—Santa Rosa ...	5 0–10 0

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus, English	4 0–10 0
—French Paris Green...	10 0–10 6
—National ...	15 0–16 0
—Sprue ...	1 6—2 0
Batavia, French, per crate ...	— 6 0
Beans—	
—Guernsey, finest, per lb.	4 6—5 0
—best	2 0—3 0
—Madeira ...	4 0—6 0
Beet, per bag...	5 0—6 0
Brussels Sprouts, ½-bag ...	2 6—3 0
Cabbage, per doz.	1 0—2 0
Carrots, ½-bag ½	2 3—2 6
Cauliflowers, English—	
—Cornish, crates, 18's, 24's ...	6 0—9 0
Kent, 15's ...	4 0—5 0
—French— St. Malo ...	6 0—7 0
Celery, washed, per doz ...	16 0–21 0
Chicory, Belgian	0 4—0 5
Cucumbers, doz.	16 0–24 0
Endive, French, per crate ...	— 6 0

	s. d. s. d.
Lettuce, Cabbage	
—French, indoor, 48's	4 0—5 0
— — outdoor...	5 0—6 0
Mint, per doz. bun.... ...	6 0—8 0
Mushrooms—	
—cups, per lb.	2 0—3 0
—broilers „ ...	1 9—2 0
Parsnips, cwt....	6 0—7 0
Peas, hothouse, per lb. ...	4 6—5 0
Potatos—	
—English, cwt.	4 0—7 0
—Azores, new per case ...	10 0–18 0
—new hothouse, per lb.	1 0—1 6
—Canary Island	10 0–12 0
Rhubarb, forced, per coz. ...	1 6—2 3
Savoys, per doz.	1 6—2 0
Seakale, boxes, 7 lb.	4 0—6 0
—Canary Island, per bundle ...	12 0–16 0

Remarks.—Business all round is on the quiet side, perhaps rather more so than usual for the time of year. Ample supplies of Hothouse Grapes are available, but the demand is moderately good and values are keeping firm. The increasing supplies of choice fruits from the Cape are meeting a good reception by the buyers. The principal fruits consist of Peaches, Plums and Apricots, and are in fairly good condition. The Apple market is experiencing a period of poor trade, except for large, good cooking Apples. The few English Apples that are being marketed just now sell well if of first grade, and the sprinkling of Cox's Orange Pippins are also doing moderately well.

Choice vegetables, such as Asparagus and hothouse Beans, Peas and new Potatos, are all comparatively costly. Mushrooms have improved in price, and the cold weather will be responsible for some shortage in that department. Cornwall and St. Malo are sending Cauliflowers, which are selling freely, although prices are not so high as last season. A few Cucumbers are available and are realising high prices. Lettuces from France are more plentiful and cheaper, and other salads from the same source are quoted at reasonable prices, but advices suggest a shortage towards the end of the week, owing to extreme cold weather in France. Green vegetables are slightly more expensive, but are not particularly costly. The old Potato trade remains unchanged.

GLASGOW.

The severity of the wintry spell of weather had a restricting influence on business during the past week. A large area of the country was enveloped in a dense fog for four successive days, and frost up to 16° was registered. The New Year holidays accentuated the depression, which was reflected more or less in the cut flower market. Carnations fluctuated between 2s. 6d. and 6s. per dozen, while Roses declined to about half the previous figures at 4s. to 6s.; Tulips made irregular prices, William Copeland ranging from 9d. to 2s. for 6's; Thomas Moore, 1s. to 1s. 3d.; and Couronne d'Or and Rosina, 1s. 6d. to 2s.; Golden Spur Narcissi were worth 2s. to 2s. 6d.; Richardias, 5s. to 6s.; Anemones, 2s.; Ranunculus, 1s. 6d.; Lily-of-the-Valley, 1s. 6d. to 2s.; Asparagus, 1s. to 1s. 6d. per bunch, and 2s. to 3s. for trails; and Smilax, 1s. to 1s. 6d. Supplies of Chrysanthemums continue to dwindle. Florrie King and Sunshine realised from 8d. to 1s. for 6's; white and yellow Thorpe, 1s. 6d.; Favourite and Wilcox, 1s. to 1s. 3d.; Heston White, 6d. to 1s.; Winter Cheer, 2s. 6d. for 6's and 3s. for large sprays; and Duckham, 3s.

The fruit market was very quiet, with Apples and Oranges unchanged in values. Pineapples sold at 4s. 6d. each; home-grown Grapes, 2s. 6d. to 4s. 6d. per lb.; and the first arrivals of bitter Oranges, 19s. per chest. South African Plums realised from 6s. to 10s. per box, and Peaches from 8s. to 10s. Incoming steamers with fruit cargoes were held up at the "Tail of the Bank," and in consequence there were no auction sales of Apples, Oranges, etc. Vegetables were scarce and dear. Cucumbers commanded 30s. per dozen, and Lettuce, 9s. per box of two dozen.

TRADE NOTES.

Both amateur and professional gardeners will welcome the 1929 catalogue of Messrs. Joseph Fison and Co., Ltd., of Ipswich, not only as a list of goods and prices, but as a store of practical hints and tips which will help them throughout the year. This latest edition, which has just come to hand, is interesting and helpful. An especially instructive feature is the report of two fertilisation experiments recently made at the firm's experimental station. The photographs and figures given form a convincing example of how perfectly plants (in this case Tomatos and Oats) may be controlled and developed by the correct administration of scientifically compounded plant foods. Many of our readers are familiar with the good offices of Messrs. Fisons' Technical Bureau. Help in such matters as weed identification and eradication is always useful; and this and any other kinds of assistance may be readily and gratuitously obtained from Messrs. Fisons' Bureau. A copy of this catalogue may be obtained post free from Ipswich.

Patents and Trade Marks.—Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers of *The Gardeners' Chronicle*.

CATALOGUES RECEIVED.

Harrison and Sons, Leicester.—Flower and Vegetable Seeds.

Stephen Benson, Charfield.—Flower and Vegetable Seeds.

Sharpe and Co., Ltd., Sleaford, Lincolnshire.—Flower and Vegetable Seeds. (Wholesale.)

Sampsons, Ltd., Kilmarnock.—Flower and Vegetable Seeds, Bedding Plants, etc.

Finneys, Newcastle-on-Tyne.—Flower and Vegetable Seeds; Gladioli.

Dickson and Co., Edinburgh.—Flower and Vegetable Seeds; Bulbs and Roots for spring planting; and Garden Implements.

Cooper, Taber and Co., Ltd., London, S.E.1.—Wholesale Flower and Vegetable Seeds.

Daniels Bros., Ltd., Norwich.—Flower and Vegetable Seeds; Fruit Trees; Herbaceous Plants, etc.

Fiddler and Sons, Reading.—Flower and Vegetable Seeds and Horticultural Sundries.

W. Drummond and Sons, Ltd., Dublin.—Flower and Vegetable Seeds; Bulbs for Spring Planting, etc.

Watkins and Simpson, London.—Flower and Vegetable Seeds.

Herd Bros., Penrith.—Flower and Vegetable Seeds; Garden Sundries.

Foreign.

Wilhelm Pfitzer, Stuttgart. — Flower and Vegetable Seeds, Bedding Plants, Roses, etc.

Francesco van den Borre, Treviso.—Fruit, Ornamental Trees and Shrubs.

THE
Gardeners' Chronicle

No. 2195.—SATURDAY, JANUARY 19, 1929.

CONTENTS.

Alpine garden—
  Alyssum Wulfenianum 44
  Antennaria dioica ... 44
  Convolvulus nitidus 44
Conifers, notes on some recently discovered dwarf 49
Covent Garden Market, proposed extensions of 40
Day Lilies, yellow, in America 50
Flower market of Ventimiglia, the ... 47
Fruit garden—
  Root-stock problem in Apple growing, the 52
  Raspberries, Autumn-fruiting ... 52
Garden Classic, a ... 39
"Gardeners' Chronicle" Seventy-five years ago 41
Glasnevin, notes from 45
Hardy flower border—
  Helianthus orgyalis 44
  Helichrysum bracteatum 44
Indoor plants—
  Crassula lactea ... 44
  Schizanthuses and Nemesias for hanging baskets ... 44
  Senecio canalipes ... 44
Notices of books—
  Handbook of Fertilisers 48
  Letters from the Steppe 49
Obituary—
  Jones, the late Mr. Thomas 54
R.H.S. Medal and Cup Awards 39
Scottish Potatos, the grading of 41
Shanghai Chrysanthemum Show ... 41
Societies—
  Guildford and District Gardeners'... 54
  North of England Horticultural ... 54
  Reading Gardeners' 54
  Royal Horticultural 53
Tobacco production, world 48
Useful trailing plants 48
Vegetable garden—
  Forcing early Potatos 52
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 40
Week's work, the ... 42
Woolman, Mr. John ... 40

ILLUSTRATIONS.

Chrysanthemum Show at Shanghai, a... 41
Cupressus arizonica (glabra) var. pendula at Glasnevin 45
Hemerocallis Margaret Perry 51
Schizanthuses in a hanging basket 43
Ward's, Mr. F. Kingdon, tenth expedition in Asia 46, 47
"Witches' Broom" on Pseudotsuga Douglasii ... 49
Woolman, Mr. John, portrait of... 40

SUPPLEMENT PLATE.
Arenaria Ledebouriana.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38·3°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, January 16, 10 a.m. Bar. 30·1. Temp. 31°. Weather, Fine.

A Garden Classic.

"OF the making of books there is no end" is especially true of books on gardening, which pour out in "damnable iteration," but a very old book on horticulture which came our way recently proved to be more entertaining than many of the moderns. It was the famous William Cobbett's *English Gardener* (1829). The *Rural Rides* of the great "reformer" is, of course, a classic, but his charm as a writer on gardening has been forgotten. Few could write English, racy of the soil, as he did, and this gift applied to gardening is welcome, for so little has been added to the art of the tiller of the soil in the last one hundred years that it is a pleasure to see the verities stated in vigorous Anglo-Saxon. The motto on the title page makes a forceful beginning, taken from the wisdom of Solomon: "I went by the . . . . vineyard of the man void of understanding, and lo! Nettles covered the face thereof: I looked upon it and received instruction," and his preface gets to the root of the matter when he states: "the reason why books on gardening are read in general with so little benefit is this, that they are often put together by men who, though they understand how to do the thing themselves, are unable to convey their instructions in language easily to be understood." That Cobbett knew "how to do things himself" there can be little doubt; it may not be known generally that he began life as a gardener and was apprenticed to Kew in his youth. In his day there was no more popular writer and speaker on rural economy. It is a merit of this book that even the simplest gardening operations are lucidly described, and one has only to read the ten pages afforded to Cucumber growing to learn that he was a master of more skilled operations. Of course, as one might expect, many of Cobbett's little mannerisms peep out at times. He was famous for his dislike of the Potato, just coming into use as a table food one hundred years ago, "as a mere vegetable or sauce (sic)" he writes, "it does very well to qualify the effects of fat meat, or to assist in the swallowing of quantities of butter." Another amusing remark is under "Purslane"—"a mischievous weed, eaten by Frenchmen and pigs when they can get nothing else." But these quotations must not be taken as typical. Except in the matter of varieties, the directions given are admirably suited to present day conditions. Nevertheless, one enjoys the writing for literary pungency rather than technical merit; for example: "I will not with Lord Bacon, praise pursuits like these, because 'God Almighty first planted a garden'; nor with Addison, because a 'garden was the habitation of our first parents before their fall'; all which is rather far-fetched, and puts one in mind of the dispute between the gardeners and the tailors, as to the antiquity of their respective callings; the former contending that the planting of the garden took place before the sewing of the Fig-leaves together; and the latter contending that there was no gardening till Adam was expelled. I like a great deal better than these writers, Sir William Temple who gave such delightful proofs of his taste in those gardens and grounds at Moor Park . . . torn about and disfigured within the last fifty years by a succession of wine-merchants, West Indians and God knows what besides." Gems of this nature are to be found all through the *English Gardener*. It is well worth the few shillings it cost on a market stall.

Our Supplement Plate.—We have pleasure in presenting as our Supplement Plate to this issue, an illustration of the dainty and charming Arenaria Ledebouriana, a plant which will appeal to all lovers of alpine plants, and especially to those in quest of the more uncommon sorts. For planting in sunny positions among rocks, in light and well-drained soil, A. Ledebouriana is ideal, for it forms a close hummock of rosettes of narrow, small, bluish-grey leaves, crowned during early summer with numerous dainty sprays of small, star-like blooms. Hailing from the Levantine Alps, where it is not uncommon, this Arenaria responds well to cultivation, and, especially in warm seasons, repays its inclusion in a collection by blossoming abundantly.

R.H.S. Medal and Cup Awards.—The Council of the Royal Horticultural Society, at its meeting on December 11, 1928, awarded the following Medals and Cups:—"Victoria Medal of Honour" (for British horticulturists resident in the United Kingdom deserving special honour at the hands of the Society), to Mr. Alexander Malcolm, the well-known amateur raiser of Sweet Peas, and to Mr. W. Atkinson, the Managing Director of the renowned nurseries of Messrs. Fisher, Son and Sibray, of Sheffield; "The Lawrence Medal" (for the best exhibit shown to the Society during the year), to the Hon. Vicary Gibbs, for his exhibit of vegetables on October 9, 1928; "Veitch Memorial Medals" and Prizes (for those who have helped the advancement and improvement of the science and practice of horticulture)—to Miss Gertrude Jekyll, V.M.H., a Gold Medal and £50, in commemoration of her services to horticulture and gardening; to Mr. C. G. A. Nix, V.M.H., a Gold Medal for his services to the Society; to Mr. John Fraser, F.L.S., V.M.H., a Silver Medal and £50, for his work on Pelargoniums, Salix and Mentha; to Mr. Samuel Smith, The Gardens, Pengerrick, Falmouth, a Silver Medal, for his work in hybridising Rhododendrons; and to Mr. W. Reynolds-Stephens, P.R.B.S., a Silver Medal, for his work in connection with the Sculpture Section of the International Exhibition of Garden Design, on October 17-24, 1928. "The Cory Cup" (for the best new hardy plant of garden origin shown to the Society for the first time during the current year), was awarded to Mr. F. C. Stern, for his Rosa highdownensis, which was shown on September 11, 1928; and "The Loder Rhododendron Cup" (for not merely floral display but the value to horticulture of the work of the recipient, whether such work includes the production of flowers or not), to Professor Wright Smith, M.A., F.L.S., V.M.H., of Edinburgh, in recognition of his very valuable work on Rhododendrons and Azaleas. "The George Moore Medal" (for the best new Cypripedium shown to the Society during the year), was awarded to Mr. R. Paterson, for Cypripedium W. H. Moore, Stonehurst variety, shown on November 27, 1928; "The Sander Medal" (for the best new greenhouse plant shown to the Society during the year), to Baron Bruno Schröder, for Amaryllis Baroness Schröder, which was shown on April 24, 1928; and "The Williams Memorial Medal" (for a group of plants of one genus which shows excellence in cultivation—fruits and vegetables excepted), to Lady Aberconway and the Hon. H. D. McLaren, for their exhibit of Primulas staged at Chelsea, 1928; and to Messrs. Sutton and Sons, for their exhibit of Cyclamens staged on February 28, 1928. These cups and medals will be presented at the Annual General Meeting of the Society on Tuesday, February 26, at 3 p.m.

The Black Currant Mite (Norfolk) Order of 1928.—The Minister of Agriculture and Fisheries, by virtue and in exercise of the powers vested in him under the Destructive Insects and Pests Acts, 1877 to 1927, has issued an Order declaring the destruction of Black Currant bushes infested with big bud compulsory in the Administrative County of Norfolk (excluding the Borough of King's Lynn, or the County Borough of Great Yarmouth). The Order came into force on the 1st inst.

Legacies to Gardeners.—The late Mr. Robert Edward Free, of The Elms, Mistley, Essex, who died on September 7, 1928, left £400 and his dogs to his gardener, Mr. H. C. Williams, if still in his employ.—The late Mr. John Farmer Thirlby, V.D., J.P., of Beechwood, Darley Abbey, Derby, who died on September 2, 1928, left £50 to his former gardener, Mr. John Kerry.—The late Lt.-Col. Richard Hammett Kirkwood, late of the Devonshire Regiment, of Boldrewood, Burghfield, Berkshire, who died on September 23, 1928, left £50 to his gardener, Mr. Walter Percy Ford.

Belgium's Favourite Rose.—The votes of 3,876 wireless users in Belgium have been cast in favour of Madame Edouard Herriot as being the best Rose. The next highest numbers of votes were given to Caroline Testout, Reine des Neiges, Souvenir de Georges Pernet, Louise-Catherine Breslau, Souvenir de Claudius Pernet, Etoile de Hollande, Madame Abel Chatenay, Golden Emblem and Elvira Arramayo. It is surprising to find a white Rose so near the head of the list; and it is unlikely that a list of Roses obtained in a similar way in this country would yield the same results.

Horticultural Club.—A Club Dinner will be held on Tuesday, January 29, at St. Ermin's Hotel, Caxton Street, Westminster, at 6.30 p.m. for 7 p.m. Following the dinner, Mr. William Hales, F.L.S., Curator of Chelsea Physic Garden, will deliver an address, illustrated by lantern slides, on "A Tour to Ceylon, Malay and Java." Members of the Club are asked to realise that a subscription of 10s. 6d.—a temporary arrangement—is insufficient to meet the rental of the Club room and other expenses; therefore, the Committee has decided that Rule 6, which reads: "The Annual Subscription for members shall be one guinea. All subscriptions shall be due and payable on the first day of January in each year" must again become operative as from January 1, 1929. Subscriptions for the current year should be sent to the Hon. Treasurer, Mr. Peter R. Barr, 11 and 12, King Street, Covent Garden, London, W.C.2.

Horticultural Show at Zutphen.—A winter horticultural exhibition was held at Zutphen, in Holland, on December 19 and 20. The weather was severe, and snow lay on the ground; but this made the contrast all the more striking between conditions outside the exhibition hall and the blaze of colour presented by the masses of flowering plants inside, music and the pleasant warmth of the atmosphere all assisting to create a cheerful impression. Tulips, Cyclamens, Primulas, all sorts of foliage plants, and great quantities of Mistleto, in preparation for Christmas, were well displayed, and the exhibition resulted in a well-merited triumph for organisers and exhibitors alike.

Miss Ellen Willmott, V.M.H.—We learn that the action brought by Miss Ellen Willmott, V.M.H., of Warley Place, Great Warley, against Galeries Lafayette, Ltd., in which she claimed damages for alleged false imprisonment and malicious prosecution, was settled in the King's Bench Division a few days ago. In February last, the defendants charged Miss Willmott with theft, and she was acquitted. The defendants have apologised to Miss Willmott and undertaken to defray her out-of-pocket expenses; and Miss Willmott has withdrawn any allegation that they were actuated by malice, and accepted their assurance that the measures taken by them were the result of a genuine mistake in connection with their efforts to prevent pilfering.

Distribution of Seeds from Kew.—A list of the seeds of hardy herbaceous plants, and of hardy trees and shrubs, which are available only for exchange with other botanic gardens, as well as with regular correspondents of Kew, is now obtainable from the Royal Botanic Gardens, Kew.

Lord Bledisloe.—Owing to various developments which have taken place in connection with the fertiliser interests of Imperial Chemical Industries Limited (particularly the formation of Scottish Agricultural Industries Limited), and to the inauguration by the Government of the Agricultural Credits Scheme, the project which the Company had in mind for the inauguration and support of a special Imperial Grassland Association has proved unnecessary and incapable of complete realisation without duplication and overlapping of effort. Lord Bledisloe, who had been invited to become the chief of this new organisation (and who, it will be remembered, relinquished his membership of the Government with that object in view) has retired from his association with the project. While regretting this step, and acknowledging Lord Bledisloe's willingness and ability to undertake the work which would have been entailed had the scheme been proceeded with, Imperial Chemical Industries Limited realised, in view of the developments which have taken place, that it had no alternative but to release Lord Bledisloe. The Company is glad to announce, however, that it has obtained Lord Bledisloe's consent to a continuance of his assistance in an advisory and consultative capacity on agricultural questions generally.

Picture Postcards of British Trees.—An interesting and instructional series of picture postcards, depicting various British trees, each as it appears in summer and in winter, together with coloured illustrations of the shoots, foliage, flowers and fruits, is being issued by the Trustees of the British Museum. The postcards so far received depict the Sycamore, Horse Chestnut, Wild Apple, Ash, Beech and Sweet Chestnut. It is stated that in these series of cards the term "British" has not received too rigid an interpretation, as it has been thought proper to include within their scope various well-known and common trees which are, strictly speaking, not native; instances of such are the Horse Chestnut and Larch. Persons desirous of obtaining more complete information than is in the leaflets describing each tree, are advised to consult the following works:—*Trees of Great Britain and Ireland*, Elwes and Henry; *Trees and their Life-histories*, Percy Groom; *Familiar Trees*, Boulger; and *Wayside and Woodland Trees* (a pocket guide), Step; while if information is required about timber, the book recommended is *The Timbers of Commerce and Their Identification*, by Stone.

MR. JOHN WOOLMAN.

Mr. John Woolman.—Commencing his horticultural career some twenty-five years ago, at his father's nursery at Tyseley, which at that time consisted only of six small glasshouses for the growing of Chrysanthemums, Dahlias and bedding plants, Mr. John Woolman has since realised his early ambition to become an active force in the horticultural world, so much so, that the name of Woolman is now a household word among lovers of Chrysanthemums and Dahlias, especially, for exhibits of these subjects, also of Carnations, by Mr. Woolman, are often among the finest displays to be seen at the leading flower shows, while the many fine novelties introduced by Mr. Woolman during recent years bear eloquent testimony to his skill as a hybridist. Mr. Woolman recalls how that when he commenced work at the Tyseley nursery, the only form of transport for exhibition material was a handcart, on which were taken Chrysanthemums and Dahlias to shows not too far distant. This method of transit soon proved inadequate, as also did the nursery at Tyseley, and a move was made to the present well-known Sandy Hill Nursery, at Shirley, over twenty years ago. In course of time, the exhibits from Sandy Hill Nursery became more numerous, many large shows were visited, and numerous successes gained. Then came the war, with its consequent disorganisation of business, and Mr. Woolman, answering the national call to arms, joined the Royal Navy. Nearly three years were spent in monitors on the Belgian coast and in destroyers bent on the destruction of enemy submarines, and he was eventually discharged after many exciting experiences. Upon arrival home, he commenced to develop a collection of border Carnations which, together with Chrysanthemums and Dahlias, were exhibited on a large scale with great success, and many trophies, gold medals and prizes were awarded each year to the Shirley displays. At the present time, great quantities of these plants are disposed of annually from Shirley, not only in the British Isles, but to all parts of the world. Despite the calls of business, Mr. Woolman finds time to serve on the committees of various horticultural societies throughout the country; the National Chrysanthemum and National Dahlia Societies are of special interest to him, and of these there is no keener supporter. Novelties of Chrysanthemums, Dahlias and Carnations are introduced each year, and the numerous awards received by them testify to their merit. From the modest commencement made by his father forty-six years ago, has been built the now extensive nursery business—with twenty-six glasshouses at its command, and conducted under the name of H. Woolman—chiefly through the ability and perseverence of Mr. John Woolman.

A German Rosarium.—The Rosery established at Sangerhausen by the German Rose-lovers' Society twenty-five years ago is now well established, and contains 250,000 Rose trees comprising 8,000 varieties. The original intention of the founders to preserve the old, favourite varieties is being fully carried out, but, besides this, the Rosery provides an opportunity, by means of a permanent exhibition, for raisers to show their novelties. The collection of wild Roses entitles this Rosery to a position comparable to that of L'Hay, near Paris, among Rose gardens.

Proposed Extensions of Covent Garden Market.—We understand that the Covent Garden Properties Co., Ltd., the present proprietors of Covent Garden Market, London, have decided on the early demolition of the old Covent Garden Opera House, which is part of their property, in order to provide for a badly-needed extension of the actual market area. The site of the Opera House will probably be utilised as an extension of the foreign fruit market, at present accommodated in a building known as the "Floral Hall," which has never been used as a flower market, although built originally for that purpose. It is also proposed to remove the present Foreign Flower Market westward, to use this area as a roadway, as formerly, the approaches to the market being seriously and increasingly congested. The inward tonnage of produce to Covent Garden in 1910 was 359,537, but in 1928 it was over a million. The time has arrived when some drastic step must be taken to increase the accommodation, and the old Opera House has to go. It was built first in 1733 and re-built sixty years later, but was destroyed by fire in 1808, this third structure being also burnt to the ground after a ball in 1856. The present building, designed especially for Italian opera, was opened in 1858, the "Floral Hall" being sometimes utilised for promenade concerts.

Association of Economic Biologists. — The Annual General Meeting of this Association will be held on January 25, at 5 p.m., in the Botany Lecture Room of the Imperial College of Science and Technology, South Kensington, London, S.W.7. Following the general business, such as the presentation of reports, election of new members and election of officers, Mr. S. G. Tallents, C.B., C.B.E., Secretary of the Empire Marketing Board, will read an address on "The Work of the Empire Marketing Board." Students of Biology and others interested are cordially invited. The annual dinner of the Association will be held at 7 p.m. in the Imperial College Union.

1928 Register of Growers of Certified Stocks of Potatos.—During the past season, Inspectors of the Ministry of Agriculture have examined nearly 9,000 acres of growing crops of Potatos with a view to certification as found to be true to type and reasonably free from rogues. Particulars of crops certified as reaching the required standard of purity, of not less than 99·5 per cent., are given in the *Register* of Growers of Certified Stocks of Potatos in 1928, which has just been issued by the Ministry. Growers are reminded that, under the Wart Disease of Potatos Order of 1923, the only tubers that may be planted in land on which Wart Disease has occurred at any time, are Potatos of approved immune varieties which have been inspected while growing, and certified as true to type and reasonably free from rogues, or Potatos of approved immune varieties saved from crops grown on the land in the previous year. The Order further provides that, on the sale of any

Potatos for planting, the number of the relative certificate issued under the Order must be quoted. In the case of Potatos of approved immune varieties, the certificate number to be quoted is that given in the *Register* of Growers, but in the case of other varieties, the number to be quoted is that of the relative Clean Land Certificate issued to the growers concerned, and not that of the Purity Certificate quoted in the *Register*. Copies of the *Register* of Growers may be obtained from the Ministry on application to its Offices, 10, Whitehall Place, London, S.W.1, price 1s.

The Grading of Scottish Potatos.—This subject was discussed at a meeting of the Directors of the Scottish Chamber of Agriculture, held at Edinburgh on Thursday of last week, when the Secretary submitted a draft scheme drawn up by the Potato Standardisation Committee of the Ministry of Agriculture for applying the provisions of the Agricultural Produce (Marking and Grading) Act, 1928, to the trade in ware Potatos in England and Scotland, together with a tabular statement showing the suggested grades, etc. Mr. J. C. Henderson, Tayport, who presided, thought they should go warily about this matter, as it seemed to him that the scheme looked detrimental to the farmer. He suggested that they might see how the system was going to work in England before adopting it in Scotland. Mr. H. Miller, West Fortune, asked if it was not a scheme for the benefit of the man who handled his Potatos carefully; the other men would have to fall into line or take the consequences. Mr. F. S. Mollison, Broughty-Ferry, expressed the opinion that they had plenty of restrictions in the Potato trade already, without supporting a scheme which would hamper the trade a great deal more. Mr. George Mercer, Dalkeith, thought the desire behind the scheme was to give the man who turned out a good article something extra for his labour. The scheme was official, and by adopting it they might get their better grades of Potatos marketed in a better way; at the same time, some of the conditions in the schedule were too severe, and he suggested that the subject be submitted to a committee for consideration. Mr. J. Rodger, St. Andrews, seconded, and this became the finding of the meeting.

Shanghai Chrysanthemum Show.—Through the kindness of Mr. G. H. Rendall, the Hon. Secretary of the Shanghai Horticultural Society, we have received a large photograph (Fig. 20) showing the Chrysanthemum Show held by his Society in the Town Hall, Shanghai, on Tuesday, November 13, 1928. He informs us that the National Chrysanthemum Society's Medal was awarded to Lady Li Ching Mai for the best twenty-four Japanese Chrysanthemums in not fewer than six varieties; the regulations permitted either cut blooms or pot plants, and Lady Mai, like most other competitors, showed two dozen plants, each carrying one bloom. One of the N.C.S. Certificates was awarded to Lady Li Ching Mai for a wonderful exhibit of trained plants, every plant trained to fit into its position in the circle. It is this exhibit that appears in the centre of the picture, and it was the great feature of the Shanghai show. A second Certificate was awarded to Mr. Koo Lan Chow for the best single specimen plant in the show. All the large plants exhibited were marvels of skilful, if formal, training and good culture.

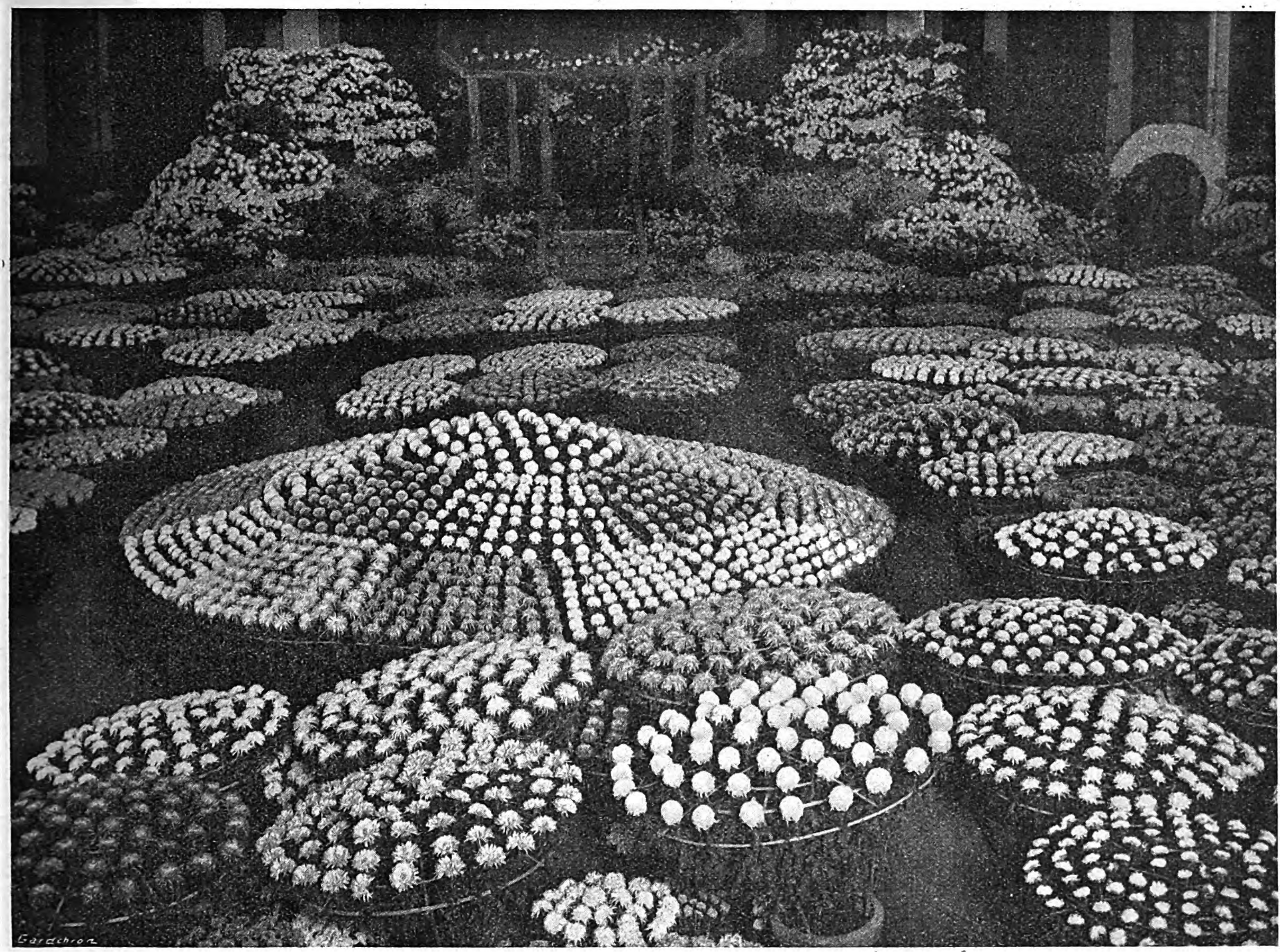


FIG. 20.—A CHRYSANTHEMUM SHOW AT SHANGHAI.

Appointments for the Ensuing Week.—MONDAY, JANUARY 21: East Anglian Institute of Agriculture lecture; Streatham Rose and Sweet Pea Society meets. WEDNESDAY, JANUARY 23: Newcastle and District Horticultural Society meets; Wimbledon and District Gardeners' Society meets; Sheffield Chrysanthemum Society meets. THURSDAY, JANUARY 24: Royal Gardeners' Benevolent Institution Annual Meeting at the Connaught Rooms.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Goldfish in Frozen Ponds.*—Are any of those good people (who are always telling you to break the ice in your ponds) aware that goldfish in China, their native place, live in rivers which are frozen over every year? One would suppose that these fishes were small whales which were obliged to come to the surface for air, which true fish, of course, never do; and the reason why you must break the ice in your ponds is that if allowed to continue freezing it lowers the temperature of the water, so that the fish are starved from cold, not want of air. If your correspondent's ponds were as deep as mine, more than four feet in every part, he might allow the ice to remain untouched in ordinary winters. I believe the fish bury themselves in the mud near the borders, and so are soon killed; but most fish-ponds are too shallow. Mine is not twenty-two feet across, and has been frozen for more than a week at a time, and I have never lost one; my chief enemies are owls. Common carp can be transported in a frozen state and thawed again alive! *Somerset. Gard. Chron., January* 21, 1854.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE, Manchester.

Miltonias.—Specimens of Miltonia vexillaria, and many of the hybrids derived from it, that have been growing steadily in the intermediate house, are now becoming more active at the roots and will require a slightly increased supply of water each time the compost becomes dry. Moisten the soil sufficiently to encourage root action, but saturation must be avoided, or the roots may decay. The outer sheath of the new growth often prevents the young roots from growing outwards; in this case the sheath should be split carefully and pulled off, so as to allow the roots to enter the compost. The young leaves in the centre of the new growth frequently adhere to each other; these should be separated with the aid of the handle of a budding knife, or a similar smooth instrument, to prevent the growth becoming deformed. Thrips should be kept in check by vapourising the division occasionally; if the pests have gained a hold, the plants should be dipped in a weak solution of an approved insecticide, tilting the plants afterwards to allow the moisture to drain away, and taking care not to allow the insecticide to reach the compost, and cause it to turn sour. The plants require a free circulation of air on all favourable occasions, but not draughts. A buoyant atmosphere should be maintained, and at this season should not be overcharged with moisture, as this may cause discoloration of the tips of the leaves, as also will overwatering at the roots. Miltonia Roezlii and M. Phalaenopsis should receive similar treatment to that prescribed above, but they require to be grown at the warm end of the house. Miltonia hybrids are very uncertain in regard to their flowering season; many plants flower twice during the year, therefore repotting has to be done at various times. The best time for this operation is when the young growths are a few inches high and about to produce new roots. Over-potting should be avoided Well-drained receptacles should be used, and a compost of equal parts Osmunda and A.1. fibre, one part Sphagnum-moss, and a few dried Oak or Beech leaves, broken up roughly and well mixed, adding crushed crocks or broken charcoal to keep it open, should make a suitable rooting medium. A little extra Sphagnum-moss may be added to the finishing layer if desired. Water should be afforded sparingly to all freshly potted plants until the new roots are well established in the fresh compost. Later on, as the sun increases in power, the plants will require shading from direct sunshine.

Coelogyne cristata and its varieties.—Where a quantity of these highly decorative Orchids is grown, their flowering season may be extended by introducing a batch of the earliest plants, which are now producing their flower spikes, into a slightly warmer temperature. They will require a gradually increased supply of water at the roots each time the compost becomes dry, care being taken not to allow the water to collect around the base of the flower scapes, or decay may set in. After the flowers are expanded, they should keep perfect for a longer period if the plants are removed to a drier and cooler position; but a moist and cool atmosphere will quickly cause the flowers to become spotted. When the flowering period is over, the plants only require an intermediate temperature, at which period also fresh rooting material may be afforded to any specimens that require it. Annual root disturbance is not advisable, and where there is plenty of room for development, top-dressing may be resorted to, carefully removing any sour soil and decayed bulbs, and working in a compost consisting of equal parts of fibre and fibrous loam, and one part Sphagnum-moss, with charcoal added to keep it open. Where repotting is necessary, three bulbs to each growing point are sufficient to retain. When remaking the specimens, some of the growing points should be arranged towards the centre of the receptacles, using small wire pegs to keep them in position. Water them sparingly until well established, while their surroundings should be kept moist by frequent syringings.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hatfield, Hertfordshire.

Flowering Plants.—The house in which plants are in bloom should always receive air through the top ventilators, both night and day, and unless the weather conditions prove unduly severe, these should never be closed tightly. On the other hand, cold draughts should be avoided. Guard against high temperatures due to excessive fire-heat, for this would result in weakened growths, and flowers produced under these conditions would lack substance. A night temperature of 50° is suitable for plants that are flowering, but on mild nights this may be exceeded to the benefit of the plants, while, on the other hand, if the nights are cold and frosty, allow the temperature to fall a few degrees rather than use too much fire-heat. Concentrated manures should be used sparingly for the next few weeks, but so soon as the days lengthen the amount applied may be increased. Soot water and diluted liquid cow manure are excellent fertilisers for these subjects.

Repotting.—Late batches of Calceolarias, Cinerarias, Clarkias, Schizanthuses, and any other annuals, that are still in small receptacles, may now be moved into larger pots. With the lengthening days, root action will be more active, and plants that are repotted now should grow quickly, the roots soon penetrating their new compost. These subjects should succeed in good, ordinary open soil. When they have filled their receptacles with roots, they should be assisted by frequent applications of liquid manure.

Wintering-flowering Begonias. — Begonias of the Gloire de Lorraine type that have passed out of flower may be cut back slightly and kept somewhat dry at the roots; but not to the extent that the production of basal shoots is checked, for these make the most suitable cuttings for producing plants for the forthcoming season. So soon as these shoots are about three inches in length, they should be removed with a sharp knife and inserted in sandy soil in a propagating frame. The other section of Begonias, represented by such fine sorts as Optima, Exquisite, Elatior, Fascination and Mrs. Heale, require careful treatment when out of flower. It is not advisable to cut these Begonias back hard, but every effort should be made to induce them to retain their foliage so long as possible. Careful watering is necessary, but at the same time, the compost should, on no account, be allowed to dry out. A suitable temperature at this season is one ranging between 50° and 60°. With careful management, most of the foliage will be retained, until such time as root action is active again. Mite, rust and fog are probably the worst enemies of these Begonias. To keep the mite and rust in check, fumigating alternately with nicotine compound and sulphur, using the latter through the Campbell Vapouriser, should be practised.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Pot Vines.—If started early last month, these should now be moving freely, and the various necessary operations should be carried out at the proper time. Disbudding and tying-in will claim first attention. Both these operations should be done with care, and a little later, each shoot should be pinched at the first or second leaf beyond the bunch, according to space. Direct syringing should be discontinued when all the buds have started, the paths, walls and borders being damped two or three times a day, according to requirements. The night temperature may be increased to 55° to 58°, with a corresponding rise during the day; a little air should be admitted on all favourable occasions. One-year-old, cut-back vines, which are intended for fruiting in pots next year, and were cut down to the lowest buds last month and dressed with styptic, may now be placed in a little heat and gradually moistened at the roots to excite growth, before being shaken out and repotted. In the meantime, clean some eleven- or twelve-inch pots, and prepare the compost in readiness for them. It is very important that the soil be prepared in advance, as all composts in which bone-meal and other concentrated stimulants are incorporated are improved by being mixed two or three weeks in advance. Good turfy loam, with lime rubble and a little bone-meal added, should make a suitable rooting medium for vines in pots. A little vine manure may be added, according to the quality of the loam. When the shoots are from one inch to three inches in length, pot the plants firmly in warm compost and plunge them in a steady bottom-heat of 75°. Syringing daily should keep them quite moist enough until new roots have formed. At this stage remove the weakest shoots and syringe and water only with tepid water; feed the vines with liquid stimulants when well established.

Peaches and Nectarines.—If a few pot trees of such varieties as Cardinal, Early Rivers, Duke of York and James Walker Peaches have been started into growth, these may now be followed by a second batch of trees, including such varieties as Peregrine Peach. Select well-rooted specimens in pots of moderate size, with short-jointed wood. Do not force them too rapidly at the beginning; a night temperature of 45° to 48° should be maintained. Encourage the trees so much as possible during the day, when sun heat is available. The chief requirements at this stage are healthy trees and well ventilated houses. Avoid a close atmosphere in mild weather, and do not allow the temperature to fall below 40° in severe weather. Early houses containing permanent Peach and Nectarine trees may now be closed, the borders well watered, and a moist atmosphere maintained not so much by direct syringing as by damping the paths and other spaces. Syringe the trees once or twice a day with tepid water in fine weather, and once only in cold or cloudy weather. As the trees approach the flowering stage, fumigate the house lightly once or twice to keep them free from aphis until the fruits are set. A night temperature of 45° to 48°, and 55° to 60° by day, with little fire-heat, should ensure a free production of blooms on healthy trees, and fruits should set freely if a temperature of 50° to 55° is maintained and the house is carefully ventilated, provided a brush is passed over the flowers each midday. As we cannot control the weather, we should endeavour to produce the required conditions in our forcing houses by maintaining a brisk, buoyant atmosphere, by supplying warmth through the pipes, and admitting plenty of fresh air.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Clematises.—Where it was neglected during autumn, Clematises of the Jackmanni, viticella and flammula types, should have last year's growths cut back, so as to force the plants to break into young growth from near the base. This treatment will not do for the lanuginosa and montana types; these only require the dead wood and any worn-out growths removed. Where it is intended to make fresh beds of these, the sites they are to occupy ought to be deeply trenched during winter or early spring. If the soil is at all heavy it will be greatly benefited by liberal applications of decayed vegetable matter, rough leaf-soil and strawy manure, which will help to keep the soil open and allow the roots to spread freely. If Clematises are to be planted in borders, dig holes four feet in diameter and at least two feet deep, breaking up the subsoil with a fork and incorporating a supply of well-decayed manure. Fill them with fresh turfy loam and decayed manure, or add a good proportion of this compost to the existing soil. As plants of Clematis are best planted from pots, they are usually easily procurable during late spring and early summer. This will be found the best time to carry out the planting, but it is advisable to prepare the sites now. When planting takes place, see that the stems are shaded sufficiently from the hottest sun. All established plants should be given a heavy mulch of well-decayed manure, applied to the surface. A corner of a wall facing south or south-west should be reserved for Clematis Armandii. This fine species, one of the best evergreen flowering climbers from western China, blooms freely at Wisley during early spring, which is a fair indication that it will give the same pleasure in most parts of the country. It is free-growing, and when happily situated will attain a height of twenty feet or more; its rich green, glossy leaves remain attractive throughout the year, while its flowers are creamy-white, changing to rose.

Roses.—Manure for mulching Rose beds next month should be prepared. If not in stock, it should be procured, stacked and turned, so that it may be in good condition for use when required. Rose species may be pruned early this month, before other work becomes pressing. The pruning of these consists of removing dead and weak wood to admit sufficient light and air into the bushes. In some varieties the long succulent shoots get killed back each winter; these may, with advantage, be shortened back.

HARDY FRUIT GARDEN.

By Henry H. Cook, Lecturer in Horticulture, Reading University.

Pruning.—During mild weather the pruning of hardy fruit trees should be pushed on with all possible speed consistent with efficiency. Such work as digging and wheeling manure should be reserved for the early mornings, or for days when the weather is severe. There is nothing to be gained by sticking persistently to any one task, such as pruning, to the discomfort of the men employed; but when they are led by a competent foreman, and the work is varied a little, the employer stands to gain very considerably. Planting, too, may be carried out on occasions when the weather is too cold for pruning. Particular care should be taken to see that the tree roots do not become dry. This may be prevented considerably by having a plentiful supply of damp mats or pieces of sacking at hand to place over the roots while the trees await planting.

Planting.—Where this important work has been held over through inclement weather conditions, or through other pressing work, no time should now be lost in completing it. It is important that there should be ample drainage, for there is nothing more productive of canker and other kindred diseases of fruit trees than badly-drained soil. The hole for the tree should be wide and deep enough to hold the roots comfortably without crowding or cramping. All torn and injured roots should be cut back to sound wood. Place the tree in position and spread the roots to their fullest extent at their natural depths, working in about the base some of the finer surface soil, and packing it in so as to avoid air-pockets. Make the soil very firm as the filling proceeds.

Staking.—Freshly-planted fruit trees should be staked immediately, no matter how well they may have been planted, as neglect of this may seriously affect the establishment of the trees. In the case of standard trees, the best method is to place the stakes in position first, and then to plant the trees against them. This will obviate the risk of damage to the roots, as would be the case when staking is carried out after planting. Bush trees, pyramids and half-standards, however, are best supported by lean-to stakes. These stakes are driven in obliquely about two or three feet from the base of the tree, in such a way that the head of the stake is pointing in the direction from which the prevailing winds come, so as to give the tree as much support as possible. A piece of sacking should be wound around the stem of the tree to prevent the stake chafing it, and both should be secured firmly, but not too tightly, by strong tarred string.

Mulching.—Where it is possible, all newly-planted trees should have a mulching of long strawy manure to the full spread of the roots, to protect them in time of frost. When the soil is at, or near, freezing point, plant roots cease to take in water. If evaporation from the surface of the stems and branches is going on at the same time, there is nothing to repair the loss, and the tree may suffer considerably. Cold farmyard manure is not recommended for this mulching, as this tends to exclude warm atmospheric air from the roots in early spring. In the absence of stable manure the next best protection is a layer, two or three inches deep, of loose soil.

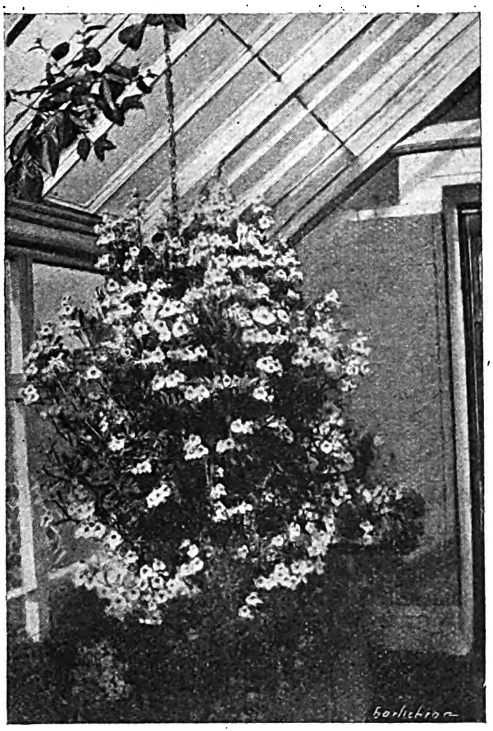


FIG. 21.—SCHIZANTHUSES IN A HANGING BASKET.
(see p. 44.)

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Vacant Ground.—Where Savoys and Broccoli have all been cut, the stumps should be dug up and removed to the rubbish heap to be burned. Manure the ground according to the crop it is to carry, and if it is not required immediately, and is on the heavy side, leave the surface so rough as possible, for the action of the weather on it will be beneficial.

Early Carrots.—A sowing of Carrot seeds should be made in frames, in drills ten inches to one foot apart. Sow the seeds thinly. When the seedlings are of suitable size, they may be thinned out, the thinnings being used for culinary purposes. Early Nantes and Scarlet Horn are suitable for this sowing.

Endive.—More plants of Batavian broad-leaved Endive may be lifted and placed in the forcing house for bleaching. If a forcing house is not available, good results may be obtained by transplanting them into frames and covering with mats to exclude the light.

Lettuce.—A sowing of Lettuce seeds should be made in pans or boxes. Sow the seeds so thinly as possible, as if they are sown too thickly the seedlings are liable to damp off. Keep the seedlings near the glass on a shelf, and water them carefully.

Bean and Pea Sticks.—The sticks for Peas and Beans should be examined and put in their various sizes, and if too few, the number should be increased. It is much better to procure sticks now, when in a dormant state, than to cut them when they are in leaf. Hazel growths are best for Runner Beans, and if long, straight rods of not too great a thickness are selected, they should last for several years.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

General Work.—At the time of writing, the ground is frost-bound, a condition most suitable for wheeling or carting manure. Other operations which may be carried out are pruning, lopping, cutting hedges other than evergreens, and trimming Ivy on walls, although the Ivy is better left until March or April, so that a shorter time elapses before it is again covered with leaves. Evergreen hedges are better left until danger of hard frost is over.

Sweet Peas.—If not already done, the ground should be prepared for Sweet Peas. Remove the top spit and lay it aside, then turn over the second spit as deeply as possible—even if it is of clay it should be broken up well—and add a good quantity of manure and, if obtainable, fresh turf edgings and similar material, which are, I consider, preferable to a too heavy dressing of manure; the resulting flower spikes may not be so long, but the blooms will be better placed. Make the bottom layer of soil firm and leave the top spit exposed to the weather for a month or two. When filling the trench add material similar to that prescribed above, also some ground bones.

Onions.—Where these are grown for transplanting, the middle of January is an ideal time for sowing the seeds. Boxes, three inches deep, are most suitable; some old flaky manure or leaves should be placed in the bottom for drainage. The compost should be fairly rich and not wet when used. It should be passed through a half-inch-mesh sieve and the box then filled to within half-an-inch of the top; the compost should be made firm around the edges of the boxes, but do not ram the whole too firmly. Sow the seeds rather thinly and cover them with soil, after which press the surface firm, water and cover with a piece of glass and paper. Place the box in a warm house until germination has taken place, after which the seedlings should be removed to a cool house and kept well up to the glass. Do not allow the soil to become dry, but avoid overwatering.

Lettuce, Early Cabbage, etc.—Seeds of Lettuces, early Cabbages, Cauliflowers, Parsley and Leeks may be sown at any time; they may be treated as advised for Onions. The glass over the seed-boxes should be turned every morning and the progress of germination watched carefully, as a day too long in heat and darkness may result in the seedlings becoming drawn and weak.

Euphorbia jacquiniaeflora.—A good batch of this subject is most valuable at the present time. I find it is best to root fresh cuttings every year, but it may be grown on into much larger plants, being a true shrub. When the plants pass out of flower they should be placed in cooler quarters and kept dry at the roots to rest them for a few months. In April or May they may be re-introduced into heat and sprayed regularly until growth commences. As these growths reach three inches in length remove them with a heel and insert three or four together in a two-inch pot of very sandy soil, which should be placed in a close case. When rooted, the cuttings should be potted on and grown in heat until July, when they may be hardened off and grown in cold frames for seven or eight weeks, after which they should again be returned to warm greenhouse conditions. They prefer a fairly rich, sandy compost, of two parts loam, one part old manure, and one part leaf-mould. Five- or six-inch pots are quite large enough for the final stage, and no pinching is necessary.

INDOOR PLANTS.

SCHIZANTHUSES AND NEMESIAS FOR HANGING BASKETS.

Two plants which deserve to be more widely used as subjects for hanging baskets are the Schizanthuses and Nemesias. I have found the large-flowering hybrid Schizanthuses and the small-flowering Nemesias to be the most suitable. Seeds of both should be sown during the early part of September in light soil and placed in a temperature of about 60°. Prick off the seedlings into small pots when ready, using an open compost, and grow them on in a cool house, care being exercised at all times to avoid over-watering, as these plants are peculiarly susceptible to damping-off.

When the Schizanthuses are ready for five-inch pots, choose the largest specimens and plant one in a ten-inch or twelve-inch basket, using a compost of one part loam, and half-a-part leaf-mould and sand, adding a little bone-meal and wood-ash. Hang the basket in a cool house near the roof-glass, and do not give water until the plant is established. Tie down the growths as they become long enough, arranging them equally around and under the basket, but preserving a few of the central shoots to furnish the chains by which the basket is suspended. Before flowering commences the basket should be entirely hidden. Liquid manure and soot-water applied alternately at this period will be beneficial. I have seldom found it necessary to practice stopping the plants. If kept growing steadily during the winter, a gorgeous display of blossom will result, as the accompanying illustration (Fig. 21, p. 43) shows.

Nemesias should be stopped occasionally to promote a bushy habit, one plant being placed in a six-inch basket, or three plants in a twelve-inch basket. The same cultural directions should be followed as for the Schizanthuses. The use of excessive heat and moisture will result in failure. *E. J. Bryant, Queenswood Gardens, Englefield Green.*

CRASSULA LACTEA.

As a winter-flowering plant for the greenhouse or window, this comparatively little-grown Crassula is ideal. About mid-December it produces its spikes of tiny, pure white flowers. These are four to six inches in height, and very graceful in appearance, being equal in all respects to those of Roman Hyacinths. The growth of the plants, when raised annually from cuttings, does not exceed three inches.

Propagation and cultivation are simple. In February or March, insert five cuttings in a five-inch pot filled with an open, sandy compost and well-drained. Place them in a greenhouse, where they will soon root, and then grow them on in a sunny frame or in the open during the summer—they do not require any further potting on—and if, in early autumn, they are placed in a light position in a house just kept free from frost, they should flower freely in due course.

The whole secret of success lies in growing the fruits under cool conditions throughout all stages of growth. After flowering, they will send up many basal growths which serve for cuttings to provide a successional batch.

SENECIO CANALIPES.

Undoubtedly one of the best winter-flowering climbing plants for the cool greenhouse, this member of the Groundsel family does not appear to be at all well known. It is not included in the *Kew Hand List* (although cultivated in the Succulent House at Kew), Nicholson's *Dictionary of Gardening*, or Bailey's *Cyclopaedia of Horticulture*, nor, so far as I can ascertain, is it mentioned in any trade list published in this country; this is to be regretted, for it is an excellent plant in every respect.

It belongs to the same section of the genus as the better-known S. macroglossus, and is a vigorous grower, bearing lobed, heart-shaped leaves which are of a somewhat succulent nature. From November onwards, for a considerable period, the showy inflorescences are in evidence. The flowers are borne in terminal, branched corymbs; they are loosely arranged, and each is about three-quarters-of-an-inch in diameter. The ray florets are few in number and a bright yellow, while the rather small disc is of a deeper and duller colour.

At Kew, it thrives planted out in a small border formed on the stage, and trained to the rafters in such a position that it can obtain the full benefit of all the available sunshine. It is propagated readily by means of cuttings inserted in a sandy compost. *T. H. E.*

ALPINE GARDEN.

CONVOLVULUS NITIDUS.

The late Reginald Farrer, after extolling the beauties of this species, concluded with the statement: "It seems an awfully shy flowerer." That is just my own experience. For a good many years the plant has been prospering abundantly in so far as growth is concerned. It has spread over a considerable space at the margin of a dry, stony border, and colonised a square foot or so of the adjoining path. Now and then it flowers, and the big, rosy-white cups are so beautiful and have such a perfect setting in the hoary greyish-green of the short, leafy tufts, that one only wants many more of them. But what C. nitidus lacks, and why it persists in rambling about at the expense of its flowering propensities I, at any rate, have not been able to divine. There is some consolation to be derived from the fact that I am not alone in failing to flower this charming subject more successfully. Nevertheless, that does not make me any the less anxious to learn whether some such magician as Mr. F. W. Millard has managed to satisfy it, and, if so, how. We read of it growing naturally in rock fissures and gravelly barrens, so that root-restriction and a hard life may be the key to its loveliness. *J.*

ALYSSUM WULFENIANUM.

Quite distinct from the better-known and popular Alyssum saxatile, a familiar plant in the great majority of gardens, is A. Wulfenianum, from the Alps of eastern Europe, and withal a really attractive alpine plant, never so charming as when trailing over a large rock, its twisting and brittle growths clothed with rounded and fat, silvery-grey leaves, and terminating in rather large heads of somewhat loosely packed, clear pale yellow flowers, with notched petals. These are produced during late spring or early in the summer.

A. Wulfenianum is not common in gardens of this country; I know of no British nursery which offers this species for sale, although it may be obtained from several continental firms which deal specially with alpine plants.

It does not seem to be long lived, in fact, after a few years—a trait also of the better-known Alyssums—it begins to present a rather ragged and untidy appearance, when it may be replaced by young plants, which may be raised quite easily from cuttings rooted in a bed of sand in a cold frame during the summer.

Like all the members of the race, it delights in full exposure to the sun, while the soil in which it is planted should be of a light nature, amply drained and containing an abundance of chips and small pieces of rocks. A. Wulfenianum is closely related to the even more beautiful and rare Alyssum idaeum.

ANTENNARIA DIOICA.

Of the many low-growing, carpeting plants generally planted on the rock garden, one of the most useful is Antennaria dioica, which forms a rapidly spreading mat of bright, silvery-leaved rosettes. There are several colour forms of this species, the most attractive being A. d. hyperborea, with deep rose-pink flowers.

A. dioica has a wide natural distribution, and is described as being common in northern Europe, Asia and America to the Arctic regions, and in the mountain regions of central and southern Europe, and Russian Asia. It is quite common in Scotland, Ireland and Wales, and is frequent in many parts of England. In its several forms it is attractive, for the Composite flowers—small "Everlastings" on stems two or three inches high—are produced freely, but it is as a bedding plant to Crocuses and other delicate subjects that this silvery-leaved Antennaria is most useful.

One of the most charming effects I have ever seen created by its use was in conjunction with Iris reticulata, planted thickly among it, and the delicate Iris blooms looked very charming above the silvered groundwork, which, incidentally, continues attractive throughout the year.

A. dioica is the easiest of subjects to establish. It is not particular with regard to soil, and delights in a warm, sunny situation, while the creeping stems root along their lengths as they extend, and so make it easy of increase. *M. W.*

HARDY FLOWER BORDER.

HELIANTHUS ORGYALIS.

One of the latest species of Helianthus to bloom is H. orgyalis; in fact, in cold districts, and when early frosts are experienced, its floral beauty is often prematurely marred, yet this fact alone should not deter the planting of it at the back of the herbaceous border, or in groups in the wild garden, for which latter purpose it is excellently adapted.

As grown in this country, this herbaceous perennial is, perhaps, more attractive in foliage than in flower, for its stately, erect stems, rising to at least six feet, and often considerably more, are closely packed with long, slender, linear leaves, which droop gracefully over each other and so make picturesque columns of verdant green leafage. In autumn, the stems lengthen rapidly, thereby spoiling the charm of the foliage, into long panicles of small, bright yellow flowers, which, provided they are not destroyed by frosts, provide a bright splash of colour for so late in the season.

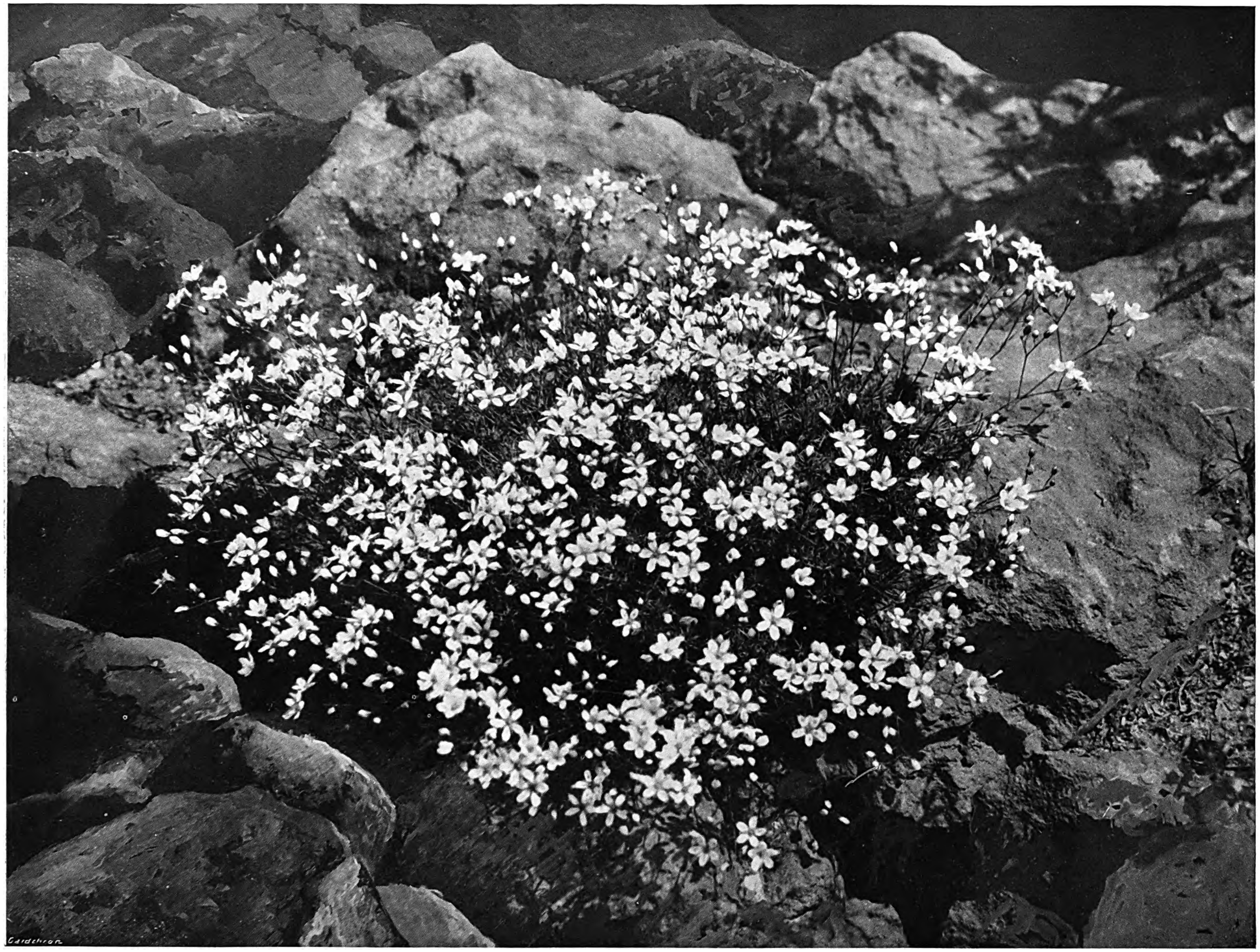
H. orgyalis, although hailing from a warmer climate—the dry plains of Nebraska and Texas—survives the severest winter with impunity and responds, under cultivation, to liberal treatment, although it is not, like many of its relatives, addicted to spreading too rampantly, while it relishes a sunny, warm position, and deeply worked, well enriched soil. It is, of course easily increased by division. *W.*

HELICHRYSUM BRACTEATUM.

When Mr. Ingwersen sent me this plant some time ago, a recent experience with a few other Tasmanians did not tend to raise my hopes as to the prospects offered by this newcomer. But H. bracteatum has, in every respect, lived up to the recommendation that came with it. Last winter it endured as much as 23° of frost on more than one occasion, and even the severe weather which succeeded a very mild February did not affect it seriously. H. bracteatum may, therefore, I think, be considered robust enough for most places, and it is a plant that is also sufficiently distinct to win for itself recognition in good company.

A sound perennial with a dark green, slightly bristly foliage, H. bracteatum puts up nine-inch flower-stems which break into bloom during the later summer and autumn. Unlike most of the perennial Helichrysums in cultivation, the flowers of this species are a burnished golden-bronze, egg-shaped, and about one-and-a-half inch in length. These not only invariably arrest the attention of those interested in the unusual, but they happen to blend very sympathetically with the prevailing tints of autumn. H. bracteatum appears to be a sun-lover, and although it is not fastidious as regards soil, so long as this is freely drained, I rather think it needs a fairly good loam. *A. T. J.*

Supplement to THE GARDENERS' CHRONICLE.



ARENARIA LEDEBOURIANA.

NOTES FROM GLASNEVIN.

It is generally agreed that Conifers do not flourish in or near large cities or towns, and probably for this reason, coupled with unsuitable soil, some of the Conifers at Glasnevin are by no means equal to specimens flourishing in Wicklow and other rural districts in Ireland.

That the site of this garden was once more suitable than it is now is evident by the proportions attained by certain old specimens still extant, but of rugged and worn-out appearance. In the middle of the Pine Hill still stands a fine bole of Abies nobilis, tall and straight, surmounted by but a few straggling branches, yet this tree is a proof of the purer atmosphere of probably seventy years ago, when Dublin city lay miles away. Certain Cedars, too, obviously of great age, both Deodars and the Lebanon Cedar, testify to the better atmospheric conditions of earlier times. Within the past few years Dublin, in common with other urban areas, has experienced a boom in building and houses rise like Mushrooms in a night, showing up in directions where less than ten years ago nothing but green fields stretched so far as one could see. That a sooty deposit is rapidly accumulating on the leaves is soon apparent when working through the collections, from the blackness of one's hands. How long, therefore, Conifers will continue to succeed here is a problem, but there is little doubt that some are already suffering.

Of those that appear to find the conditions most unsuitable, the Abies undoubtedly come first; there is barely one presentable specimen of the genus in the whole collection. This I attribute to three causes, unsuitable soil, smoke, and spring frosts. In previous notes, I have alluded to the damage done to the newer species by frost, and although they recovered remarkably during last spring and summer, there is a yellowing and dropping of the older leaves not compatible with perfect health. Liability to attack by aphis seems to follow any check to growth and accounts for some, but not all, of the leaf-dropping.

Piceas are in somewhat better state, but the number of really good specimens is limited. Without reference to sections, one may mention P. orientalis not yet showing any injury; the Common Spruce, P. excelsa, fairly good; and the Serbian Spruce, P. Omorika, unaffected and forming one of our best and most beautiful specimens. Many comparatively young plants of the newer Chinese Piceas are included in the collection, and these, so far, continue to grow fairly well, yet they are distinctly more sparse in leaf than the same species farther from Dublin.

The Douglas Fir, Pseudotsuga Douglasii, may be dismissed as a lime hater, and, but for collection purposes, not worth planting here, although a noble tree where lime is absent and other conditions suitable. The Tsugas are a mixed quantity, for although no notable specimens can be claimed, yet T. Pattoniana and T. diversifolia retain their normal green colour, while T. Sieboldii and T. caroliniana become yellow in leaf at once.

Turning to those Conifers that do best under the conditions of soil and atmosphere here, there is little to choose between Pines and Cypresses (Cupressus). Most of the Pines hardy enough for our climate do very well, and there are quite good specimens of the older and better-known species. The newer species from China promise well, and there are flourishing young plants of P. sinensis and its varieties growing, it must be admitted, in good soil, which years ago replaced what was little more than gravel. The Mexican Pines are barely hardy enough for Glasnevin, but a healthy plant of P. Montezumae is probably twenty feet high, and the mountain form of this species, P. Hartwegii, promises well. P. patula, although the "needles" are browned at the tips in winter, makes good annual growth, and so does P. Ayacahuite, nearly related to the Himalayan P. excelsa, which also flourishes. A young plant of Pinus Greggii is healthy and beginning to grow well.

All the forms of Cupressus Lawsoniana flourish, and for many purposes there is no better Conifer, some of the glaucous and golden varieties being unexcelled for ornamental planting. The Japanese species, C. obtusa and C. pisifera, make good specimens in good soil, but languish and become stunted in dry, gravelly soil. Cupressus glabra is growing rapidly, and apparently finds the conditions tolerable in the meantime. This, if it continues to flourish, promises to be an interesting tree. Of columnar habit when young, it is conspicuous among other green species by reason of the silvery-grey leaves. A similar plant is named C. arizonica, which is said to differ from the former in the absence of resin glands on the leaves, and there is a pendulous form (Fig. 22). Cupressus lusitanica, the Cedar of Goa, grows fairly well, but becomes thin and bare at the base eventually, due, perhaps, more to frost and cold winds than unsuitable atmospheric conditions; it usually shows a distinct browning of the ends of the shoots in winter. C. cashmiriana, although tried in a variety of positions, refuses to live in the open, and only one small plant of C. formosensis has survived, and is not progressing. I cannot state whether the failure of C. formosensis is due to atmosphere, or whether it is a lime-hater, but I am told that it grows well in districts subject to greater cold. Other of the commoner species, such as C. macrocarpa, C. nootkatensis, C. sempervirens, etc., are still flourishing. Junipers on the whole continue to grow satisfactorily, the few exceptions being due, probably, to unsuitable soil.

Thuyas vary—the older specimens of T. occidentalis and T. orientalis are no longer flourishing—and the best of the genus are T. plicata and T. (Thujopsis) dolabrata, the latter a handsome and attractive Conifer.

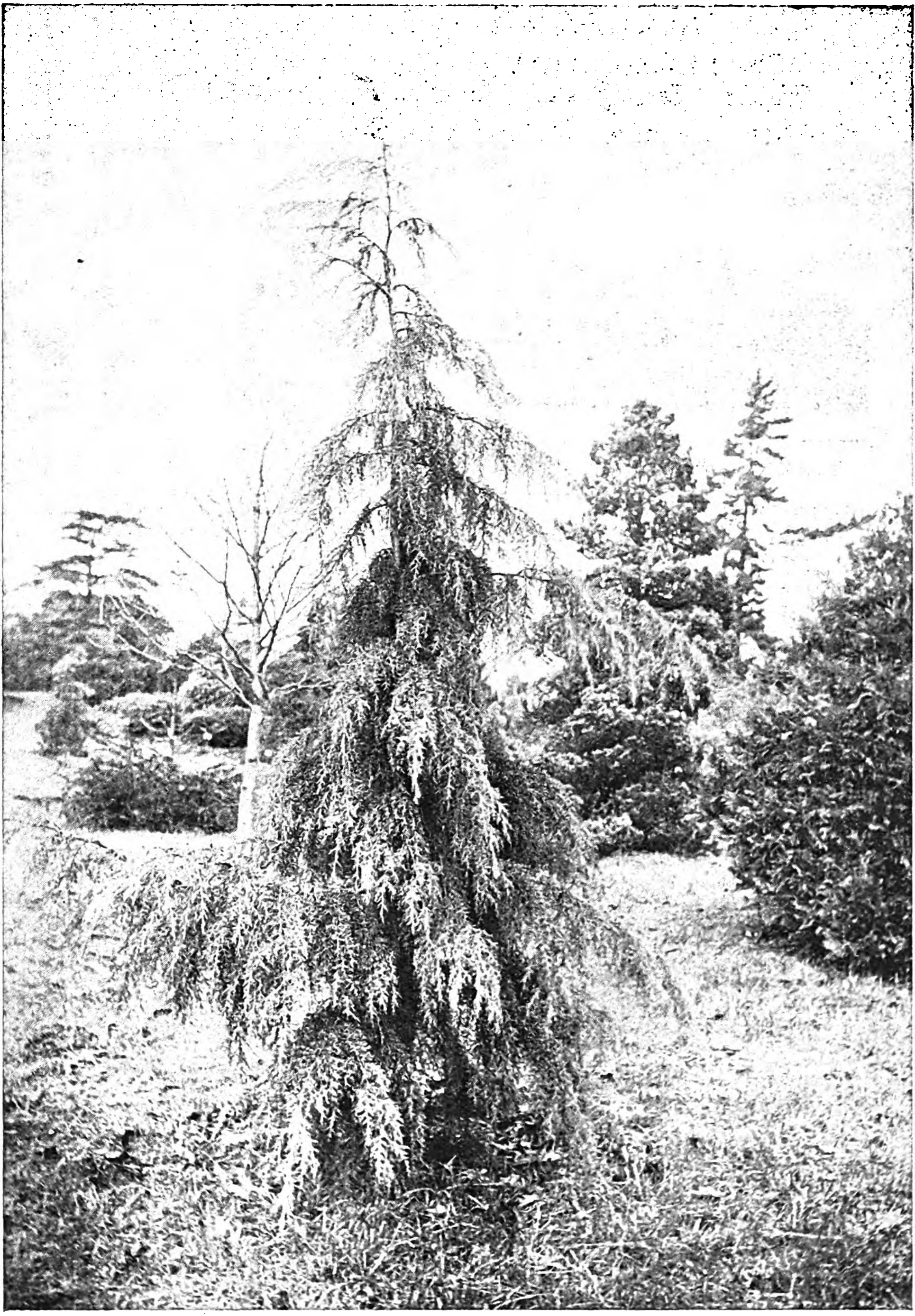


FIG. 22.—CUPRESSUS ARIZONICA (GLABRA) VAR. PENDULA AT GLASNEVIN.

The Common Yew grows remarkably well, and is represented in many varieties. Prumnopitys elegans does very well and is as hardy and vigorous as the Yew, but Saxegothaea conspicua is not a success, due chiefly to unsuitable soil and perhaps to being tender.

Numerous other Conifers might be alluded to, but enough has been said to show that arboriculture near a growing city has many problems. If a Conifer, which is generally known to be hardy, refuses to grow in the open at Glasnevin, we are inclined always to blame the limy soil or the deteriorating atmosphere. *J. W. Besant, Glasnevin.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XI.—Off.

March 1 saw five of us bowling along the Rima Road in the Political Officer's car. For the first fifteen miles or so, it is quite a good road, along the top of an embankment well above flood level; further on, the new work had not had time to settle, and it was not long before we found ourselves over the axles in soft clay, at a complete standstill, for the heavy car was carrying a big load (Fig. 23). However, we dug it out and got going again. Presently we crossed the Digaru river (Fig. 24), which at this season runs in a few shallow streams in a bed a quarter-of-a-mile wide. In the rainy season it is impassable for a car, and, of course, all temporary Bamboo trestle bridges are carried away.

The jungle through which we had been driving is very fine, and the road at this time of year was illuminated by the scarlet Erythrina indica. Enormous specimens of Terminalia myriocarpa and Bombax malabaricum were seen, besides Fig trees in great variety; very common also were the huge-leafed Pterospermum acerifolium and the dreary looking Duabanga sonneratioides. This last was also in flower and much visited by small birds, especially minivets, apparently seeking flies; the flowers being very brittle, there is a constant rain of floral fragments under the trees. We got as far as Teju, on the Lohit, that day. The cart road goes on another eleven miles to Dening, but with a big car so heavily-laden, it was considered advisable to go no farther; and the Political Officer, after an hour's fishing in the Lohit (Fig. 26), went back to Sadiya, leaving us to our own devices.

Next day, we walked the remaining distance to Dening, which is the last outpost on the road, altitude 2,290 feet. On the following day, we sent off some of our loads to Theronliang, over the ridge, and we ourselves followed on March 5.

Dening has an enormous rainfall, catching the crest of the cloud spate as it sweeps across the plain to the hills. In 1925 the rainfall was 269 inches; in 1926, it was only 217 inches. Then in 1927 it rose to 313 inches, 24 inches falling on July 7! Practically all the bridges were washed away during that deluge, and the hill road melted away like a snowball at midsummer. April and July-August are the wettest periods.

During two days spent there, I collected Jasminum anastomosans (with unpleasantly sweetly-scented flowers), Viola, Impatiens, and a form of Thunbergia laurifolia, with cream flowers, faintly tinged with violet; several ground Orchids, a Leguminous tree with fluffy, fragrant, cream flowers, like Calliandra; a Clematis in fruit (probably C. smilacifolia), and Chirita. In the jungle, I picked up the fruits of a Spondias—oval, and as black as Morello Cherries—Kydia calycina, which is a very common tree, and a Michelia. The jungle is, of course, evergreen, but few trees were in flower.

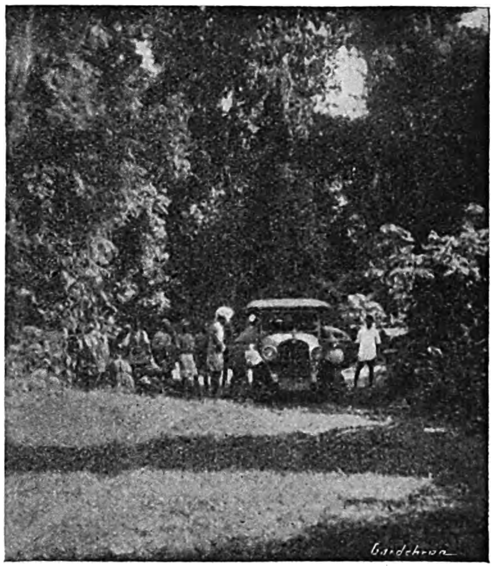

FIG. 23.—THE LOHIT VALLEY ROAD: BOGGED.

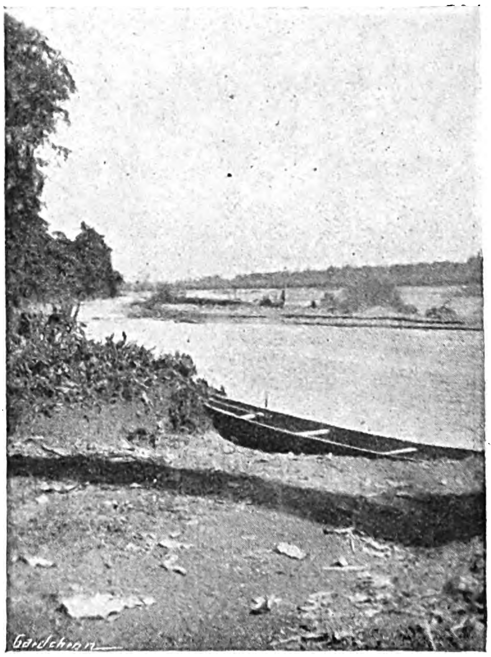

FIG. 24.—DIGARU RIVER, ON THE WAY TO DENING; LOHIT VALLEY ROAD.

At Dening we were still in touch with Sadiya and with civilisation. Dening gets a mail once or twice a week. It has one shop, and also a canteen for the outpost, where we could buy a few tinned provisions. We could telephone to the Political Officer, and get a reply within an hour. But after we left this haven, there was nothing more to hope for, should things go amiss. Appropriately enough, we started in the rain on March 5, and as we climbed it turned to a downpour. We reached Dreyi, 5,140 feet, in the afternoon, and then came a terrific thunder storm, with a deluge of rain; some of the loads, including my bedding, did not turn up that night, but we kept a big fire going in the bungalow, while the thunder banged from hill to hill and the lightning glowed through the rain, mist-like—an arc lamp in a London fog.

The weather improved for the final climb to the saddle, 6,000 feet, and as we descended into the sticky Tidding valley, the sun shone out again. Theronliang, 1,930 feet, by the Tidding river, is the last bungalow on the Lohit valley road, mile 72. So rarely is it visited by officers from Sadiya that there were only half-a-dozen names in the visitor's book since I had signed my name in December, 1926!

So we settled down for our last few days in a house, and fished and botanised while the Mishmi interpreter scoured the thinly populated valley for coolies. There are some remarkably big Sago Palms a short way up the hillside, and near the summit of the ridge, at 5,000 feet altitude, a big deciduous Magnolia grew. At the top of the saddle, I found a large-leafed Castanopsis with uncommonly large fruits, and in the jungle, common trees included Sterculia colorata, Caryopteris, Terminalia myriocarpa, Saurauja napaulensis, Ficus Cunia, Cinnamomum and a Pandanus; climbers included Combretum and a big climbing Jasmine closely allied to J. scandens, which was just coming into fragrant flower. The fruits of Sterculia colorata look like leaves, being thin and opening quite flat, with one seed attached to each suture near the base; the natives eat these seeds, and, in fact, they have a pleasant, nutty flavour. Apart from the trees, few of which were in flower, there was not much of interest here, the valley being choked with dense jungle except for scattered patches of cultivation and secondary growth indicating former cultivation. The jungle is always poor in flowers, and the season was not yet far enough advanced. Our best hope for herbaceous stuff lay in the high bank of the path which slanted to and fro up the steep ridge for 4,000 feet to the saddle. Here the violet Chirita grew luxuriantly on rocks where the shade promised sufficient moisture on sunny days, while Violets revelled in the sunshine—only they were never violet, but white or mauve, with striped lips. Here also was Impatiens, with flowers like the yolk of an egg for yellowness; purple Corydalis, Polygonum capitatum, and a white Begonia with large, nestling flowers. Another species of Begonia was also flowering—it grows erect, making clumps in dense thickets, often growing under bushes, and always in heavy shade. The flowers are white, in crowded, sessile clusters all up the stem, and the dark green leaves are thick and fleshy. Still another species, with small, narrow, pointed leaves, forms a regular bush, five feet high or more; it was not in bloom, but the flowers are white and squinny. A fourth species, which grew among the undergrowth, on heavily shaded banks, was conspicuous for its immense leaves, each leaf standing from two to three feet high on its thick, succulent stalk, and sometimes having the blade, which is smooth and glossy, so much as thirty-three inches from tip to base; I have not seen this ornament to the genus in flower. The natives eat the leaf-stalk, like Rhubarb.

One morning a troop of baboons came down to the river from the jungle on the opposite side to play on the sands; in the van came brown father, cautious at first, crawling sedately, drinking from the river, and then sitting up on a boulder, like patience on a monument, while he looked all around him; next brown mother, not quite so cautious, but more sedate; lastly, little hopping, light-coloured and light-hearted babies, frisking along and teasing each other. The jungle here came right down to the edge of the sand, and watching the same spot, we saw monkey after monkey emerge from the gloomy overhanging vegetation, and stalk out on to the warm, sunny sand. Then they all trooped off in single file to a favourite tree, which they climbed, and then sat down, some to eat nuts, others to swing themselves. Meanwhile, coolies were coming in, sometimes in twos and threes, sometimes in tens and twenties; and as they came, we packed off loads of rations, stores and instruments to the Delei valley, three days' march away. (It may be recalled that on my trip from Rima to Assam in 1926, I had marched from the Delei valley to Theronliang, under the sharp spur of necessity, in two days; but I was not anxious to repeat that performance!)

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, 1928, Vol. LXXXIV.

The genus Rubus is represented in this region by many species, most of them very aggressive, and none of them beautiful, the best being the dwarf, alpine species with large flowers. But for garden purposes even the best do not compare favourably with the North American species, such as R. deliciosus. Down in the valleys, wherever the jungle is cleared and the ground abandoned after cultivation, one or other species of Rubus presently springs up. The first to flower—it was already in bloom—is R. rosaefolius, closely followed by R. paniculatus and R. lasiocarpus, the last-named having pink flowers. The fruits of all are edible, and thin as the flavour certainly is, one eats them greedily, thankful enough for any fruit in the jungle; a statement which may surprise some of our writers of tropical fiction, who fill their jungles with rare and refreshing fruits. "Rare" is, perhaps, right! However, by April, the yellow Raspberries of R. ellipticus were ripe in the hills, and we found them quite delicious. In the clearing all round Theronliang bungalow, Cynoglossum amabile was a weed, and had been flowering throughout the cold weather.

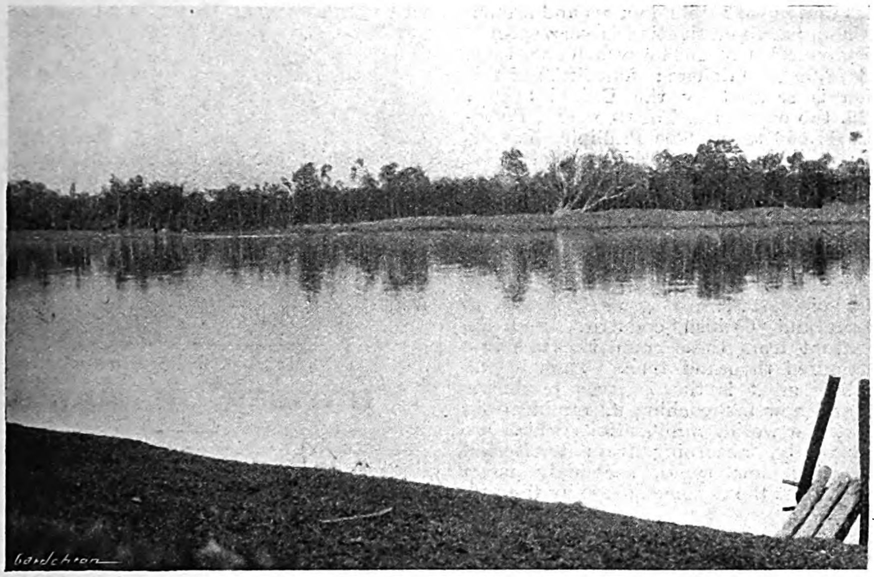

FIG. 25.—RIVER AND JUNGLE SCENE IN ASSAM.

On clear days we could look right up the Tidding valley, far beyond the banks of tropical forest on either side, to high, snow-clad peaks, which formed part of the Delei watershed; and, right opposite our door, the mountains rose in an almost vertical wall to 8,000 or 9,000 feet. Stewing as we were in the growing heat and dampness down below, even these glimpses of the promised land were enough to whet the appetite. So that when, on March 13, the last sixteen coolies required turned up ready for the road, we packed what remained to us, and started hopefully up the Lohit, on the second instalment of the journey. *F. Kingdon Ward.*

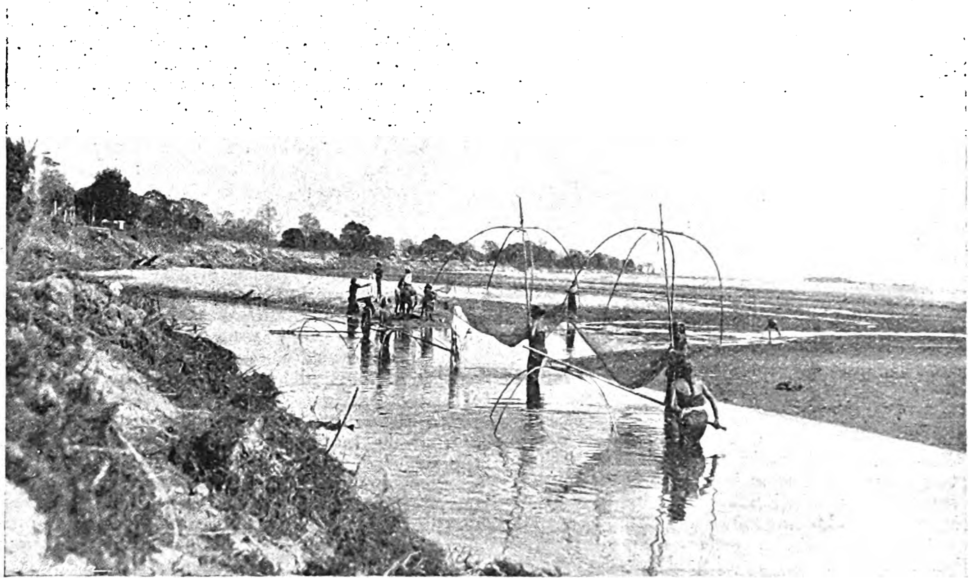

FIG. 26.—FISHING IN THE LOHIT AT SADIYA: DRY WEATHER.

THE FLOWER MARKET OF VENTIMIGLIA.

It is pleasant, if just a little disturbing to the peace of mind, to let one's thoughts at this season drift to the sunny south. And a bunch of Carnations in a show-window, especially if they are of that boiled red-Cabbage variety so popular along the Riviera, is quite enough to re-awaken visions of those sun-blest shores, and especially of Ventimiglia.

The flower market of that old frontier town, which latter is hard-by the far-famed gardens of La Mortola, is the Covent Garden of the south, the great wholesale emporium of a vast and wide-spread flower-growing population, at which enormous quantities of blossoms (it is not easy to estimate Roses or Violets by the ton) are disposed of every day throughout the winter to be distributed all over Europe. These flowers, the raising of which has almost entirely supplanted the historic Olive, are the most important product of almost every hillside and valley in this part of northern Italy. Indeed, almost the whole of the peasant population hereabouts seems to be engaged in this pursuit, and any day you may see them in procession, all making for Ventimiglia. Upon modern motor-lorries, antique wagonettes, superannuated buggies, two-wheeled mule-carts canopied by the hood of an abandoned motor-car, upon donkey-back, upon tram-car and by train, as well as upon the heads and shoulders of the people themselves, the flower-crop of this sunny land is borne to the principal trading centre of the coast.

The market hall of Ventimiglia is a large open shed, spotlessly clean, and its tall, white-washed columns lend to its obvious modernity a certain classical, almost oriental, dignity amid the green foliage of the Palms without. On the stone floor of the shed the huge daily output of flowers, contained in boxes and baskets of every conceivable description, is deposited, on arrival, in the numbered places allotted to each seller. But as the flowers are as yet all hidden from view by their wrappings of paper, cloth or matting, and as the dress of the peasants is not more picturesque than it is in any London market, the prevailing note is sombre, if not a little dull. But precisely at 3 o'clock, a dramatic change takes place. A policeman touches a lever, an electric "buzzer" resounds through the building, and the market is declared open. Then in a flash every cover is simultaneously whipped-off the flower baskets, and what was a moment ago a drab and uninspiring scene is now a kaleidoscope of vivid colours. Thousands of sheaves of blossom, each a good armful and tightly bunched for far travel, are being lifted out of their crates and stood on end. The air has become filled with fragrance, there is a rising hum and chatter of voices as buyers and sellers haggle over prices, shocks of lively colour are being unceremoniously bundled into baskets and into already over-loaded arms.

In a few minutes, certainly well under half-an-hour, it is all over. Scores of motor-vans laden with flowers are whirling east and west, the peasants are heaping themselves and their empties on to the heterogeneous collection of vehicles which lines every adjacent street, the people in the exchange offices are quietly sorting and counting their money, the sweepers cleaning the floor. The market has vanished as speedily as it came.

It was about the end of February, a year ago, that I was at Ventimiglia. At that time Carnations, small of blossom but with stalks nearly two feet long, formed the bulk of the trade. But there was also a big business being done in Roses, Stocks, Calendula, Mimosa, Anemones, Freesias, Violets, Irises and white Broom (Genista monosperma), with enormous quantities of the so-called "Asparagus Fern." Impressive and spectacular as this scene is, the flowers seen by the average visitor to Ventimiglia market are, after all, only a portion of the daily exportation from this part of the world. Every morning during the busy winter season the P.L.M. Railway Company runs a special train—"*Train des Fleurs*"—from Ventimiglia to the northern cities of Europe, and all its passengers are flowers. It is an argosy bearing in the gloom of its shuttered vans the fragrance and colour and sunshine of the south, while we in England are still waiting for the first outdoor Daffodils. *J.*

WORLD TOBACCO PRODUCTION.

Some idea of the magnitude of the Tobacco producing industry may be obtained from a perusal of a contribution dealing with this subject, which appeared in the November, 1928, issue of the *International Review of Agriculture*. Little did the intrepid Christopher Columbus realise—when, on November 6, 1492, two of his men, while exploring a "verdant island," observed some natives "carrying in their mouths some kind of firebrand, from which came small puffs of smoke," and which, upon closer examination, they recognised to be "a kind of strange dried herb rolled in a spathe of Maize"—the immense consequences that were to follow so small a discovery.

At the present time the cultivation of Tobacco is world-wide, extending from the Equatorial Belt—Sumatra, Cameroons, Brazil—to the cold lands—Russia, Baltic States, Germany. It was commenced in Europe early in the sixteenth century, the plant being brought from America by Spanish and Portuguese explorers, and since that time Europeans have been responsible for the spread of Tobacco growing into many distant parts of the world, while the Turks established it firmly in Asia Minor and the Balkans. As Tobacco production has increased, so has the consumption of it.

Nicotiana Tabacum, with its many varieties—fruticosa, virginiana, brasiliensis and havanensis—is the species grown commercially, but there are other species of historical importance, which are worthy of note. It is considered that N. rustica, which has, apparently, been grown from time immemorial on the shores of the Caribbean Sea, was the Tobacco discovered by Columbus, while the variety persica, of the ornamental N. petuniaeflora, yielded to the Persians the preparation known as *tombeki*—the Tobacco for "nargile" smoking.

Only the principal exporting countries are dealt with in the review referred to, and among these the United States of America is easily first, being far in advance of any other country. Cigar Tobaccos are grown chiefly in the north-east, their production being specialised according to soils, as the various types of soils have marked effects upon the quality of the Tobaccos grown. Some conception of the vastness of the output of such Tobaccos in this area may be gained from the fact that Connecticut has an annual production of 28,000,000 lbs. of two varieties—Havana Seed and Broadleaf; the State of New York produces about 1,000,000 lbs. of the Onondaga and Big Flats varieties; Pennsylvania has an output of about 45,000,000 lbs.; Ohio, 25,000,000 lbs. and Wisconsin, 30,000,000 lbs. Ordinary smoking Tobacco is grown chiefly in Kentucky and the neighbouring states — Kentucky 240,000,000 lbs., and West Virginia 6,000,000 lbs.; Virginia and the southern states—Virginia 130,000,000 lbs., North Carolina 468,000,000 lbs., and South Carolina 75,000,000 lbs.; and Maryland and Eastern Ohio, with a total production of 27,026,000 lbs.

The Indian Empire comes next in order to the United States in Tobacco production, the total amount produced in 1925, as estimated by the Tobacco Section of the Department of Agriculture at Washington, being 374,000 metric tons, but, generally speaking, the quality of Indian Tobacco is poor, owing chiefly to lack of care on the part of the planters. China produces Tobacco on a large scale, but it is difficult to estimate the amount grown, for, with characteristic Chinese economy, such huge quantities of cigarettes are exported that they absorb 21,000 tons of Chinese Tobacco and 19,000 tons of imported Tobacco; foreign capital is largely involved, and the Tobacco is produced by American methods.

In the Dutch East Indies, cigar Tobacco is the chief production—Sumatra supplies the "wrapper," Java the "filler." The Java crop is twice the weight of the Sumatran, but the Sumatran Tobacco is more than double the value of the Javan. The average production in Sumatra is 22,000 bales, while the output for Java, in 1925, was 563,000 bales. In Russia, the production of Makhorka cigarette Tobacco has advanced from 50,000,000 kilos in 1913 to 100,000,000 kilos in 1925, and it is considered that Russia should be placed third on the list of world producers.

Coming next to South America, Brazil exports Tobaccos essential for the preparation of fine cigars, the Brazilian production ranging from 500,000 to 600,000 tons per annum. Cuba, Porto-Rico and San Domingo hold an important position among Tobacco producing countries — San Domingo cigar Tobacco is unrivalled for its fineness and aroma, while in Cuba, where cultivation is very specialised, the production of 1923-4 was 10,000 tons, valued at 23,000,000 dollars; four-fifths of this production is secured by the United States. In 1925-26, the exports of Tobacco from Porto-Rico were 11,000 tons. The Phillipine Islands add their quota to the world production of fine Tobaccos, while Paraguay, although a small country, has a world reputation for the quality of its Tobacco, as also have Columbia and Argentina.

Oriental Tobaccos, *i.e.*, the yellow, aromatic and choice kinds used in the manufacture of luxury cigarettes, are grown chiefly in the Balkan and Turkish countries, and the annual output from these countries runs into several hundred thousand tons. Thus it will be seen how great is the Tobacco producing industry and how far-reaching its ramifications throughout the world, ramifications which are extending yearly, absorbing fresh territories, and producing new types, seemingly never sufficient to meet the demands made by the consumers. *F.*

USEFUL TRAILING PLANTS.

For the furnishing of more or less upright walls, for covering the stone edges of paths, or for clothing the larger, prominent stones of the rock garden, there is a host of plants of a trailing or creeping habit eminently suited to the purpose. The Acaenas are attractive plants for sunny positions, and quickly form dense, evergreen carpets, the glaucous foliage of A. Buchananii being particularly attractive. The Aubrietias are very popular and never look more beautiful than when allowed to trail over the crevices of a low stone wall, when they present a charming sight in the spring. There are many beautiful varieties varying in shades of colour, Dr. Mules being of a deep violet-purple; Fire King, rich crimson; Moerheimii, a soft rosy-lilac; and Lavender, a charming lavender-blue. Arenaria balearica is a tiny creeping-plant which covers large areas in a short time and bears myriads of small white flowers; it delights in a moist situation. Cerastium Biebersteinii and C. tomentosum are rapid growing plants with attractive grey foliage, but they are very rampant and should be given positions where they cannot easily encroach. Gaultheria procumbens forms creeping masses of glossy foliage, its small white flowers being followed by red berries, and it is particularly suitable for covering the edges of paths in shady positions. The smaller-growing Gypsophilas are ideal subjects for covering low stone walls and are sun-lovers. G. cerastioides is a true trailer, bearing a profusion of white and violet-streaked flowers; G. repens and G. r. rosea are also attractive plants of a creeping habit.

For dry, sunny positions, the Helianthemums are extremely satisfactory subjects, their pretty, dwarf, evergreen foliage being covered in summer with small, Rose-like flowers in various shades of pink, crimson and yellow. There are also many good double varieties which are very showy. Hypericum reptans, although not a true trailer, is a dwarf plant of spreading habit with pale green leaves and large, deep yellow flowers, and is valuable because of its late-flowering habit. Linaria Cymbalaria and its variety rosea are attractive trailing plants and thrive on walls, even in the driest positions. Lithospermum prostratum is one of the finest creeping plants in cultivation, its brilliant, blue flowers being borne most profusely for several months from the middle of May. It likes a well-drained soil and a sunny position, but succeeds also in partial shade. Few plants are more attractive than the alpine Phloxes when they are planted in a position where their shoots can depend over a low wall. Prolific with their flowers, they produce sheets of colour in April, May and June, and their large cushions of needle-like foliage are always attractive. There are many good varieties, among which may be noted G. F. Wilson, with lavender-blue flowers; Leila, pale rose-grey with a purple eye; Sprite, rose with a crimson eye; Vivid, bright carmine-pink, and setacea, soft pink. The Saponarias are trailers of rapid growth and are never better served than when provided with rocks to roam over. S. ocymoides splendens has large, rosy-crimson blooms and is a charming plant. Silene maritima fl. pl. is noted for its dense, spreading foliage which carpets the ground, the flowers being borne in rich profusion, appearing like small, double-white Pinks from June to September. The value of Veronica repens, one of the dwarfest of the Speedwells, should not be overlooked, as its pale blue flowers are very attractive; it is suitable for moist and shady positions. *W. A.*

NOTICES OF BOOKS.

Handbook of Fertilisers[*]

The first point that will strike the botanical student on opening this book for the first time is that sixteen chemical elements are essential for the growth of plants, including the previous ten thought to be essential. The new ones are manganese, boron, zinc, sodium, chlorine and silicon. Boron is only required in small quantity; much of it is injurious, and it occurs in large quantity in muriate of potash extracted from the brine of Searles Lake, but it is removed and utilised in the preparation of borax. Students of Pansies will quote zinc in the case of a certain Pansy. Sodium and chlorine were known previously in connection with Beet, Seakale and other seaside plants. Here it is stated that potassium can be partly replaced by sodium. In this country it has long been known that silicon serves to strengthen the straw of cereals. Another new note is that the fixation of free nitrogen can be carried on in the soil, under favourable conditions, by other than Legume bacteria.

The first chapter also deals with nitrogen, phosphorous and potassium, the three fertiliser elements it is often necessary to apply to soil in order to get good crops. Ploughed soil (weighing approximately 1,000,000 pounds to the acre) contains 400 lbs. to 2,600 lbs. of phosphorus, and 8,000 lbs. to 33,000 lbs. of potassium to the acre, but these are mostly locked up in minerals, insoluble in water and not available to plants. Free nitrogen and organic nitrogen are discussed, and why nitrogen is the most expensive part of mixed fertilisers—but that has long been known in this country.

Most of the sources of organic nitrogen (and they are not few) are dealt with. They are well-known in the industries of this country and often used in the natural state, including hoof and horn parings, wool waste, leather meal, feathers, shoddy, etc. All these, in America, are converted into more readily available states by being mixed with raw phosphate rock and sulphuric acid, and thus nothing is wasted. The best grade of dried blood is made into some kinds of buttons; the second grade is used for feeding animals; and the third grade only is left to the farmer for feeding his crops. Phosphates are obtained from much the same sources as in Europe, but the deposits in America are much more extensive. In Montana alone 34,000 acres are reserved on which settlers are forbidden. A good hint is that the phosphorous in basic slag does not change to less readily soluble forms in the soil as superphosphate does. The usual sources of potash are briefly mentioned; then the saline lakes of the States are passed under review. Searles lake in California is estimated to contain twenty million tons of actual potash, so there is no fear of a shortage for many years. The author states that 250,000 tons of potash are actually going to waste from various industries, and that alone would almost satisfy their fertiliser requirements (annual presumably).

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[*] *Handbook of Fertilisers: Their Sources, Makeup, Effects and Use.* By A. F. Gustafson, Ph.D., Extension Professor of Soil Technology, Cornell University. Illustrated. New York: Orange Judd Publishing Company, Inc. London: Kegan Paul, Trench, Trübner and Co., Ltd., 1928. Price $1.25.

On page 29, a new fertiliser is mentioned under the trade name of Nitrophoska, which contains nitrogen, phosphorus and potassium, being a highly concentrated, complete manure. On page 74, the author warns farmers to exercise great care in the use of this and other highly concentrated fertilisers, and to make sure that these do not come into contact with the seeds, the germinating power of which they reduce. A chapter on the home mixing of fertilisers shows the farmer how to effect an economy by doing the mixing himself in early spring when little else can be done on the farm. Errors in spelling seem to be absent, but a repeated line of linotype muddles two sentences somewhat on page 4.

Bateson's Letters.

IN 1886, when Bateson, fresh from Cambridge University, was barely twenty-five and already absorbed in the evolutionary problems to which his life was to be devoted, he set off by himself to the wilds of Russia to study the *fauna* of the Aral Sea and other lakes of the Kirghiz Steppes, and in a sense, to observe the processes of evolution in the making. In particular, Bateson, in his youthful enthusiasm, had hoped that as the waters of the lakes of western central Russia varied materially in their composition, some being salt and others fresh, he would "have an opportunity of investigating the question whether these diverse environmental conditions produce any correlated changes in the structure of the animals (chiefly *Crustacea*) exposed to them."

On his return home, Bateson published the scientific results of his journey, and although, to his chagrin, he did not find the evidence he hoped he might find, his journey yielded much of extraordinary interest to biologists, and as much to travellers, who now have Bateson's account of his experiences* in the best of all forms—a series of intimate letters to his mother and sisters at home, all obviously written without a thought that they might some day be printed. But in collating these letters for posterity and editing them judiciously, Mrs. Bateson deserves well of her husband's many friends, for apart from the interest of the journey into a country but little known to Englishmen, Bateson's account of his experiences of the tragedies and comedies of life in the Steppes, in which he himself was as often the chief actor as one of the audience, makes most diverting reading. Nothing escapes the young man's observant eye, and his faculty for seeing the droll side of life carries him through more than one difficult situation, and adds immensely to the interest of the story.

Armed with letters of introduction to our ambassador at St. Petersburg, as it then was, and counting on his ability to push on to his destination with despatch, Bateson had his first experience of the leisurely procedure of official life, of which St. Petersburg had no monopoly, although it may have been carried to greater lengths there than in other capitals. Naturally, with all the impatience of youth, we see him chafing at the delays which tie him to St. Petersburg, making a ceremonial visit to this official or that, for which, at any hour of the day, he had to attire himself in dress clothes and a silk hat with a curly brim, of which there is a delightful thumb-nail sketch. He takes us with him through the interminable business of obtaining his papers and permits, without which, of course, he could hardly move a yard, and we battle with him at the Customs on the vexed question of the duty to be paid on his equipment. But for all Bateson's natural wish to shake the dust of St. Petersburg from his feet, his four or five weeks there were not mis-spent, for all the time he was making the acquaintance of *savants* and famous men in the academic and scientific world, and, incidentally, learning the first steps in the most difficult of all languages. Names familiar to botanists and gardeners continually crop up, for Bateson carried with him an introduction to Maximovitch from Lynch of the Cambridge Botanic Garden, who charged him to search for a particular Tulip. Maximovitch—"a dear little man; a very serious and gentle sort of person"—whose fluent use of our language put Bateson at his ease, had already done much of his botanical exploratory work in Japan and Russia, and not only encouraged Bateson, but made him an enjoyable companion. He found Regel, of *Gartenflora* fame, "an old boy of ninety but very active, and he turned up trumps." Later he met Kolpakovsky, whose name is familiar to Tulip growers and, as Governor of the Steppe Province, was to be of use to Bateson.

At last all was settled satisfactorily, and Bateson set off on a journey which was then a serious expedition, but would now be accomplished by train in a few days, for the branch line from Samara on the Trans-Siberian Railway to Tashkent, skirts the northern shore of the Aral Sea, and would have put Bateson down in the centre of his sphere of operations. The incidents of the journey to Moscow en route for Nijni Novgorod, where he took boat on the Volga to Samara and then followed the road to Orenburg—the gate of the Steppes—and thence to Irghiz, where Bateson made his first base, make a delightful story written with but slight restraint to those with whom he was entirely *en rapport*. Of all the delightful stories with which this enjoyable book is packed, that of the feast given in Bateson's honour by a Kirghiz sultan runs the rest close. Bateson's ceremonial attire on the particular occasion consisted of a pair of old knicker-bockers, black round tail-coat, and *cocked hat and sword*. The thumbnail sketches with which the stories are punctuated are alone a delight.

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* *Letters from the Steppe*. By William Bateson. Edited, and with an Introduction by Beatrice Bateson. London: Methuen and Co., Ltd. 1928. Price 7s. 6d. net.

NOTES ON SOME RECENTLY DISCOVERED DWARF CONIFERS.

WITHIN the past few years several new dwarf forms of Conifers have been discovered and are worth recording.

The present unfortunate lack of uniformity in the nomenclature of Conifers makes it necessary to give alternative names for some species so as to avoid confusion here and in America.

PSEUDOTSUGA DOUGLASII (OR TAXIFOLIA) VAR. ASTLEYI.

This form has arisen from the propagation of a most interesting "Witches Broom," which was found on a normal tree near Chertsey, by Mr. Alfred Astley. As will be seen from the accompanying illustration (Fig. 27), the "broom" hangs down on two sides of the branch. The foliage is very pendulous, small and fine, and of a vivid, pale grass-green colour, and the terminal buds are madder-pink and not crimson in colour. The propagated plants have retained their unusual colouring and, judging from the density of their branchlets, will probably form semi-pendulous, cushion-like plants, similar in form to the smaller of the two "brooms."

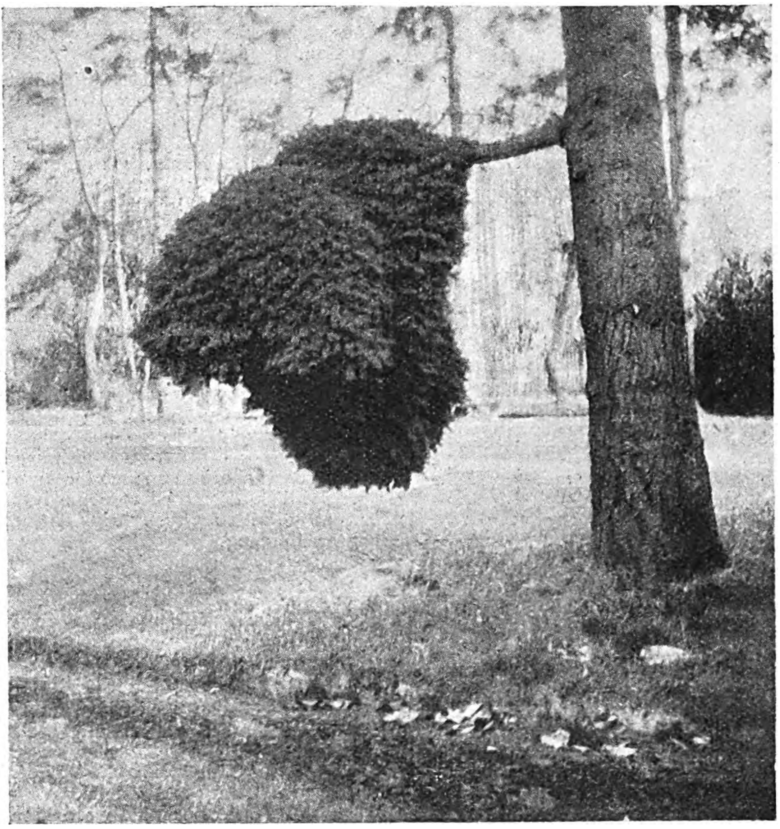

FIG. 27.—"WITCHES BROOM" ON PSEUDOTSUGA DOUGLASI, NEAR CHERTSEY.

PICEA EXCELSA (OR PICEA ABIES) VAR. ABBEYLEIXENSIS.

This I found in a plantation of normal common Spruce at Abbeyleix, Ireland, in 1911. It had made a low, slightly domed cushion about eight inches high by twenty inches across, and has increased very little in size in the intervening years. Its chief claims to distinction are its foliage and side branchlets. The former is rather long and fine and very pectinate in arrangement; the latter are all rather "curled over," giving each little branchlet the appearance of a small ostrich feather.

Cupressus Lawsoniana var. Ellwoodii.

At first sight, this might be mistaken for var. Fletcheri, but it is quite distinct. Its foliage is generally longer and thinner and still more glaucous; the inner foliage is not dark, like that of Fletcheri, but is also glaucous and very pale. The branches and branchlets of Fletcheri are all ascending and straight to their tips, with the foliage evenly spaced, whereas the branches and branchlets of var. Ellwoodii, although ascending, have their tips splayed and recurving, the foliage here being more densely crowded and decurving.

This was a self-sown seedling at Swanmore Park, Bishops Waltham, where it was found by the gardener, Mr. Ellwood, and transplanted by him to the rock garden. It has made a dense, compact, conical, little bush, about twenty-four inches high when I measured it in April last.

Thuya plicata aurea var. Rogersi.

This is a dwarf, compact, fastigiate, golden form raised by Messrs. Rogers of Southampton, and the mother plant, now fifteen years old, is thirty-three inches by nineteen inches.

Cupressus Lawsoniana minima var. aurea.

I also saw, in Messrs. Rogers's nursery, an interesting seedling form of Cupressus Lawsoniana var. minima named aurea. This is only a small plant at present and very slow-growing, but it bids fair to develop into a plant similar to var. minima in all respects except colour, that of the new plant being of a uniform gold all over.

Cupressus pisifera plumosa var. nana compressa.

This we must take to be the correct name for a plant exhibited under the title of "Retinospora plumosa nana compressa" at a meeting of the Royal Horticultural Society, in May, 1925. In either case an overwhelming name for a small, bun-like plant of inconsiderable dimensions, with very glaucous foliage intermediate between that of vars. squarrosa and plumosa—rather nearer to the former, but said by its raisers, Messrs. Van Nes, of Boskoop, to be a sport from var. plumosa.

Juniperus Wallichiana var. Loderi.

Two Junipers are worth mentioning: The first of these is a seedling form of J. Wallichiana, raised by the late Sir Edmund Loder, at Leonardslee. It has made a dense, small, fastigiate shrub, with very glaucous foliage. It has the appearance of a thick-set J. communis compressa, and when I measured it in 1927 it was about twenty-four inches high by about ten inches through.

Juniperus communis var. columnaris.

By this name we may recognise the very interesting fastigiate Juniper which one finds occasionally in nursery and private gardens, and which has the appearance of an overgrown J. communis compressa. Whether this is a reversion of the variety compressa, or a form evolved by repeated grafting of that variety on arborescent common Junipers, remains to be proved; but whatever may be its origin, the result is a most attractive, very narrowly-fastigiate Juniper, rather laxer in habit than var. compressa, and with foliage not quite so glaucous. I have seen several specimens between four feet and five feet in height, but not more. It is much slower and narrower than var. fastigiata (var. hibernica of the trade) and will be much in demand when it is better known.

Cupressus macrocarpa, Stewart's variety.

Messrs. Stewart, of Ferndown Nurseries, Dorsetshire, showed a tiny plant about fourteen inches by ten inches, at a meeting of the Royal Horticultural Society, in March, 1927. Its foliage was pale yellow, its adult branchlets tetragonal and the general appearance more like a form of C. obtusa, but it was stated by the raisers to have been grown from home-saved seed of C. macrocarpa, and to be eleven years old. *Murray Hornibrook, Ripley.*

THE YELLOW DAY LILIES IN AMERICA.*

For the gardener and plant lover, as distinguished from the commercial grower, many plants are invested with interest and value independent of their obvious qualities of merit and beauty. Such an interest gathers about all the Yellow Day Lilies. Even the commonly despised Tawny Day Lily, which so often has been cast out of gardens on to dump heaps, where it has established itself and spread, is a plant of romance, for the hand of man has carried it from its natural haunts in Asia and eastern Europe until now it is known over our own continent and acknowledged in many floras as an established exotic. For the scientist as well, it is a plant of singular interest, as it propagates itself freely by stolons and very rarely if ever by seeds. Special studies of its sterility have been made, notably by Dr. A. B. Stout, of the New York Botanical Garden, who by patient effort has accomplished what once seemed impossible, the securing of seeds from it by its own and other pollen.

Another old and widely distributed Day Lily is the Lemon Day Lily, which also has been carried about by colonists until it, too, is well known throughout our continent. This, unlike the Tawny Day Lily, has required no defender of its popularity nor heralder of its beauty, which is admitted by all.

Other species have come into gardens more slowly and are less well known than they should be. Two, the Amur Day Lily, Hemerocallis Middendorffi, and the early Day Lily, H. Dumortieri, which also masquerades as H. Sieboldii and H. rutilans, are now moderately well distributed, and the Japanese Day Lily, H. Thunbergii, is slowly coming into popular regard; but the gorgeous Orange Day Lily, H. aurantiaca, and the delicately-scented but somewhat less robust Citron Day Lily, H. citrina, are far from well-known. All these are Asiatic species of value for American gardens and will be described at some length hereafter, together with many hybrids derived from their inter-breeding.

Basis of Varietal Selection.

Just as any wild plant must show some singular beauty or carry some special virtue of fruit or flower to warrant its introduction into cultivation, so these selected plants must show some particular reason for meriting the attention which promotes them into the more select ranks of the flower garden.

The Day Lilies have various claims to such recognition, but even their most ardent champion can scarcely hope to obtain for them the affection lavished upon the Rose or the true Lily. Their very resemblance to the latter flower is, perhaps, their first claim to recognition, for their exquisitely modelled yellow flowers are almost the counterpart of some of the Lilies, although the plants and inflorescences are very dissimilar. In many cases they posses a fragrance as delicate as that of the Lilies and similarly exhaled with particular sweetness in the cool of the evening. Their colours show a range from the palest sulphur-yellows, through intense lemons, to orange and rusty reds. Some of the hues are of a singularly luminous character—a quality of great importance to one who is planning colour schemes in the perennial border.

For the gardener, whether professional or amateur, they combine three other qualities of prime importance: Permanence, tolerance of varied cultural conditions, and length of flowering season. The first two characters are, of course, interrelated, for under adverse conditions there could be no permanence. The only factors that appear to work hardship on these plants are extremes of summer drought and severe winter freezing of the semi-evergreen sorts. Both of these difficulties can be successfully overcome by the gardener if he chooses to supply water in dry seasons and uses a mulch of strawy litter for the tops during winter. Given these attentions, the Day Lilies are almost as permanent as Paeonies over our entire country.

By the selection of species and varieties, the season of flowering in the vicinity of Washington, D.C., can be extended over nearly all the summer months, and even from late April to September. In the district of Columbia the main seasons of flowering occur during mid-May, in the latter part of July, and in the early part of August, and relatively few sorts flower profusely through the latter part of June. The middle of August sees the gradual decrease of bloom in the summer-flowering sorts. Interbreeding is being carried on in various places and in time these gaps in the seasons should be filled by varieties intermediate in character between the sorts flowering in May and those flowering in July.

Tolerance of Varied Cultural Conditions.

As has already been suggested in noting their permanence and ease of culture, these plants are tolerant of various conditions of soil, exposure and climate. The natural preference is for a rich, moist garden soil, an open location with some shade during part of the day, and a climate that is neither excessively hot in summer nor cold in winter. Soils that are sandy and poor should be improved by the liberal addition of well-decayed manure or other organic material that will supply food and assist in the retention of moisture. Heavy soils which are poorly drained should be lightened to prevent standing water and severe freezing. Shade may be provided either by planting where the shadows cast by trees or buildings will fall over the bed during part of the day, or by the use of small flowering trees in the perennial borders.

The Day Lilies, unlike many flowering perennials, will bloom with some freedom under trees where, in addition to the shade, they must suffer root competition for both food and moisture. Situations more open are to be preferred, but some shade is almost essential for summer-flowering varieties of intense colouring, as the orange pigments are burned out by strong sunlight. These extremes of climate cannot be controlled by man, but by a careful selection of varieties some can be found for either extreme, the entirely deciduous species like flava, Dumortieri and Middendorffii being chosen for the north, and the evergreen or semi-evergreen sorts for the south.

For extensive plantings outside the cultivated flower gardens, some of the more robust species and varieties should be used. These should be planted in masses, as large as possible, to obtain the best effect.

Seed Production.

Seeds are produced rather sparingly by most species of Hemerocallis, even when hand pollenation is practised, for although many pods are formed, the seeds contained are often few in number. They are rarely offered in the trade catalogues. They should be gathered so soon as the capsules show signs of bursting, and may be sown at once or stored in a dry, cool, mouse-proof place until the following spring.

The early-flowering sorts ripen seeds in July, and as germination is rapid, often within ten days, the seeds may be sown at once to advantage. The small plants resulting by fall should be protected from heaving during the winter, but they are otherwise rather hardy. If they have not been transplanted the first summer they should be spaced in lines in the vegetable or cutting garden and grown to flowering size. There is considerable variability in the length of time for this, but many seedlings flower after two full seasons of growth. Nearly all the seedlings from chance pollenations are useful for garden decoration, but few show any great improvement over the parents, so seeds are not worth saving except from species, which alone reproduce truly from seeds.

The seeds of the summer-flowering sorts may be sown in pots or flats and wintered over in a cold frame or stored dry and planted the following spring. If they are sown at once considerable germination occurs within fourteen to twenty-one days, and the seedlings will require the protection of a frame to prevent winter-killing from heaving.

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* By B. Y. Morrison, Senior Horticulturist, U.S. Bureau of Plant Industry. Reprinted, in substance, from Circular No. 42, U.S. Department of Agriculture, Washington, U.S.A.

Division of Clumps.

The Day Lilies are obtained from nurseries as plants and may be ordered for delivery either early in the spring as growth starts, or late in summer after their flowering. In the event of summer planting, care must be taken that there is enough water in the soil to produce immediate root action so that the plants may be established before winter. For the first winter a light mulch of straw will be helpful, even to those sorts that are entirely hardy when established.

After these plants have been growing in the borders, they need not be disturbed until the clumps begin to fail in flowering. They should then be lifted, divided, and reset after the soil has been well enriched. This fertilisation may be postponed considerably by deep preparation of the soil at the first planting and the annual addition of well-decayed manure dug into the soil in the spring.

There are two species (H. flava and H. fulva) that are stoloniferous in their growth and so may be divided easily by pulling apart the loose clumps. The other species and varieties form rather dense clumps, which should be lifted with a digging fork to avoid injuring the fleshy roots, and divided by cutting the somewhat woody crowns apart with a sharp knife. With the most robust species, this division may often be carried on until each fan of leaves is separated from the others, but not so far that there are insufficient feeding roots on each piece. A little experience in division will soon show the best practice. Particular care must be taken to establish divisions by good culture after replanting, or they may make new growths so slowly as to remain flowerless for a year or more. Division may be practised either in the spring or in midsummer. In summer transplanting the leaves should be cut to half their length, as is done when transplanting Irises.

After division and replanting in the summer, it sometimes happens that the deciduous species make no new leaf growth until the following spring and look as if they were dead or dying. The semi-evergreen sorts usually make a considerable growth of new leaves, which remain green through the winter, provided they are fully matured before frost.

In planting or replanting, the roots should be placed so that the base of the leaves is about two inches below the surface of the soil. The plants should be spaced about a foot apart each way for those that are cut to single divisions, and fifteen to eighteen inches apart for small clumps.

Choice of Varieties.

It is inadvisable to lay down any definite list of varieties for general use. This is particularly true of the named horticultural varieties. At the present time, these are relatively few in number as compared with the hosts of named Narcissi, Tulips, Dahlias, Roses or Irises, but they comprise plants that are likely to be of relatively permanent value, as well as forms that will surely be supplanted in time by plants of improved habit or style.

For the small garden, the species and varieties that should not to be overlooked might well include the following: Spring-flowering—flava, Middendorffii, Apricot, Gold Dust and Queen of May; summer-flowering—Florham, luteola, Sir Michael Foster, aurantiaca major and Thunbergii, together with any of the commercial strains of citrina hybrids.

A brief résumé of the species and varieties available follows, with an indication of other sorts possibly forthcoming. Unless specially noted, all have been grown in the writer's garden near Washington, D.C., and treated as any amateur might handle his plants.

In addition to a considerable number of seedlings as yet unnamed, the varieties here listed have been grown for these studies. The varieties that are not mentioned in the text have not been under observation a sufficient length of time to warrant their inclusion in this circular. Only those named in Italic type represent species and their forms; the others are garden hybrids.

Ajax, Apricot, *aurantiaca*, *aurantiaca major*, Aureole, Baronii, Chrysolora, *citrina*, Citronella, *Dumortieri*, Erika, Estmere, Flame, Flamid, *flava*, *flava major*, Florham, *fulva*, *fulva cypriana*, *fulva maculata*, George Yeld, Globe d'Or, Golconda, Gold Dust, Gold Imperial, Gold Standard, Kwanso, Lady Fermoy Hesketh, Lemon Queen, luteola, luteola grandiflora, luteola major, luteola pallens, luteola pallida, Mandarin, Meehanii, *Middendorffii minor*, Mrs. Perry, ochroleuca, Orangeman, Mary Queen, Queen of May, Royal, Sir Michael Foster, Sovereign, Tangerine, Thelma Perry, *Thunbergii*, Yellow Hammer.

(*To be continued.*)

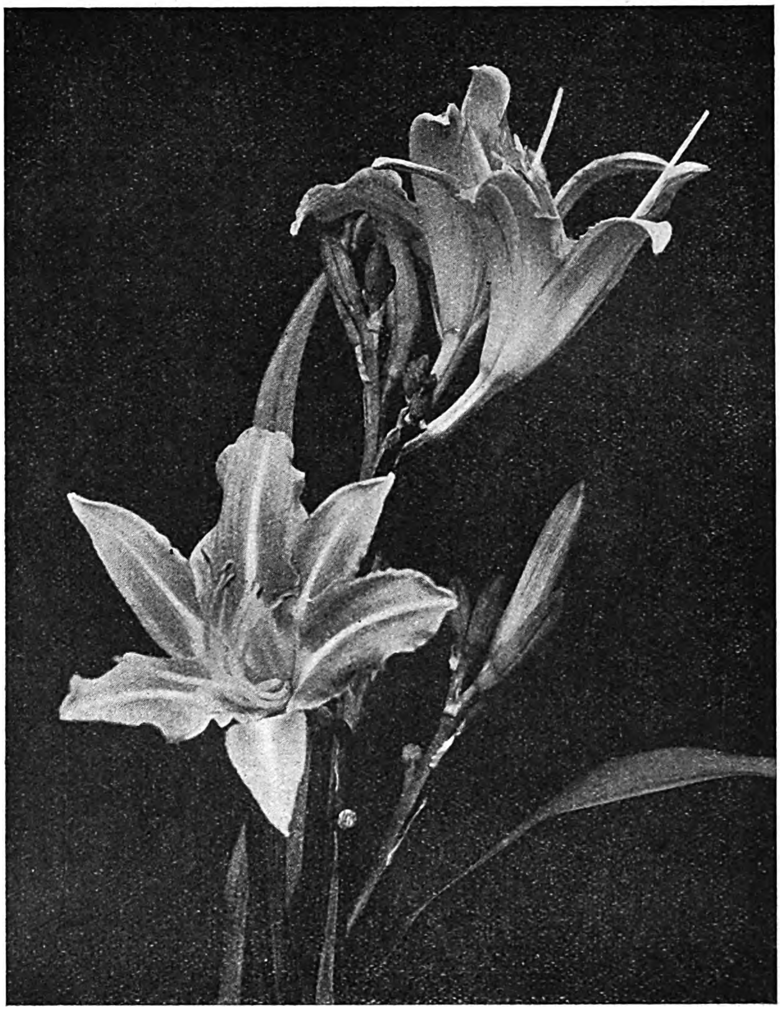

FIG. 28.—HEMEROCALLIS MARGARET PERRY.
(One of the newer Day Lilies.)

HOME CORRESPONDENCE.

The Colours of Flowers.—Referring to the "Home Correspondence" column in your issue of January 5, p. 16, I agree with your correspondent, *A Roman Reader*, that no colour chart can take the place of ordinary verbal colour description, and it was not intended to do so, but to supplement it. Colour terms such as your correspondent suggests, "Gentian-blue," "Mulberry-red," etc., are used by Mr. Ernst Benary throughout his catalogue which is sent out with his colour table, and they form a rough guide as to the tints of the flowers listed; but your correspondent is surely too sanguine when suggesting that twenty-five colour terms of this nature would suffice. A larger number than this is required to describe the various shades of red alone. Such a colour chart would certainly serve as a useful guide to those who have to draw up the descriptions of the tints of flowers they offer for sale. The various colours are not like the notes of a piano—each giving a distinct sound, separated from each other by tones or semi-tones, but merge imperceptibly into one another like the tones of a violin may do. The difficulty is to know when such a tint as a cold violet may be termed blue, and so on. There is no excuse for naming a full purple blossom ultramarine, but when flowers have to be described on the border line between two distinct colours of the spectrum, a reference to such a chart as that issued by Mr. Benary is of the greatest service. The chief hope that something may be done to secure accuracy and uniformity in colour description lies in the fact that the matter is one that is put down for consideration at the International Horticultural Conference to be held next year in London. Such uniformity can only be attained by the agreement of the leading horticulturists throughout the world. *H. H. Warner.*

Gardeners' Pay and Status.—With a view to a possible discussion regarding the general low rate of pay, and therefore, the equally low status which obtains in the gardening profession to-day, it would be enlightening to hear the opinions of your readers in this direction, and of any suggestions they may put forward by way of remedy. I would also be very glad to learn the opinion of your more experienced readers regarding the prospects that an ambitious young man might expect from following the gardening profession to-day. Up to the present, I have seen and heard much to discourage one. *R C.*

FRUIT GARDEN.

THE ROOT-STOCK PROBLEM IN APPLE-GROWING.

Your correspondent, Mr. H. Howard Grace, writing under the above title in your issue of December 29, 1928 (Vol. LXXXIV, p. 510), raises several points with reference to Apple-growing.

In the first place he asks what direct influence the experiments which have taken place on the question of root-stocks will have on Apple-growing generally throughout the country? This is difficult to answer, but it may be stated definitely that the knowledge now available will greatly encourage the development of the industry. It is, however, only one reason among many which is and will be giving great impetus to Apple culture.

Mr. Grace gives it as his opinion that it would be rash for anyone to speculate largely on a big planting scheme during these times of agricultural depression. It is strange that he should take this view. I contend it is one of the strongest arguments in favour of planting large acreages of fruit trees. Many farmers with fruit orchards—I refer to those who grow good fruits—have cause to be satisfied with this side of their farming activities.

I submit, also, he is making a mistake with reference to foreign competition spoiling the prices for home-grown produce. To prove this, I would suggest that, if he has good samples of any popular market Apple, such as Bramley's Seedling, Newton Wonder, Lane's Prince Albert or Cox's Orange Pippin, he should send them to a good salesman at any of the leading markets, either in the provinces or London, and I shall be surprised if his sales returns are not higher than those being obtained for similar varieties from abroad.

All that is necessary for the home-grower to do, is to grow a much higher proportion of first grade fruits than has been done in the past. The fact that we import millions of pounds worth every year, is proof that there is a market here. The consumption of fruits is increasing annually, and it only needs an improvement in trade generally to bring about a big boom in the fruit trade. The Apple is the most important of all fruits, and is not now looked upon as a luxury, but as a necessity, by all classes.

With regard to the grading and packing, over which a great deal of ink has been spilled, to say nothing about oratory, which would have vied with that at a political bye-election—it is now admitted that the English grower has nothing to learn from overseas. If one wished to criticise it would be that the advice to grade and pack better was given much in the same way as putting the cart before the horse, or, in other words, before there were many first grade fruits to pack. The lesson is now being learned, and first grade fruits are now produced annually in much larger proportion than of yore. Grading and packing are easy and pleasant occupations if one has plenty of good fruits to handle, but an expensive and almost impossible one with inferior quality fruits.

To summarise, I suggest that a knowledge of the root-stock problem is only one of many factors—I cannot go into them now—which must be taken into account when the question of Apple-growing commercially is considered, but if all are duly considered and intelligently acted upon, the English grower need have no fear of the disposal of his fruits in competition with those from overseas. *Arthur J. Cobb, University of Reading.*

AUTUMN-FRUITING RASPBERRIES.

Autumn-fruiting Raspberries deserve greater popularity than they at present enjoy, for once they find a place in the fruit garden it is rarely, if ever, they are supplanted. One or two summer-fruiting varieties of Raspberries also produce something of a crop during the autumn, but it is better, if late fruits are desired, to grow those kinds which are known to be autumn-fruiting, as very heavy crops may be obtained from some of these. As a rule, late-fruiting kinds do not need staking, but the treatment with regard to pruning is different from that needed by the earlier fruiting kinds.

Planting may be carried out at the same time as for other fruits, that is, during the autumn or the spring. Autumn planting is the most suitable for these varieties, as the canes become well established, and produce crops by the following autumn. They should, in any case, be cut down close to the ground during February, as it is on the ends of the growths produced during the summer that the fruits are borne.

Among the best of the autumn-fruiting Raspberries is the Hailsham, which is also known as the Hailsham-berry. It is a heavy cropping variety, producing fruits of large size, sweet, and red in colour. Another excellent variety is Merveille de Rouge, which also produces very large and sweet fruits. November Abundance is a late variety of the autumn-fruiting sorts. As its name implies, it bears fruits until November, and, like those mentioned above, it is a very good cropper, the flavour of the fruits being excellent.

Probably the latest of the autumn-fruiting Raspberries is Surprise d'Automne, which originated on the Continent. It produces fruits which are round in shape, large, and of fine flavour, and is well worth a place in the plantation.

For some reason yellow Raspberries have not found great favour, whether summer or autumn-fruiting. As with White Currants, there is not so keen a demand for yellow Raspberries commercially as for the red kinds. Yet there are varieties which, in point of quality and cropping, are able to hold their own with the more popular red sorts, and as the fruits are attractive in appearance and richly flavoured, they might well be grown more in private gardens for providing dessert fruits. *J. W. Morton.*

PROTECTING FRUIT TREES FROM RABBITS.

In your issue of December 22, 1928 (p. 497), Mr. Morton gives some useful hints on the protecting of trees from rabbits. So much damage is sometimes done by these animals, particularly in frosty weather, that further notes on the subject may be welcome, particularly from one who has had, perforce, to give some attention to the matter. It rather surprised me to find that Mr. Morton considered the surrounding of the plantation the most effective protection. I have seen many plantations so wired, but few were rabbit-proof for long. Ordinary three feet wire-netting is useless, for rabbits quickly learn how to run up it; they will also burrow underneath it, even when it is buried. A two-inch mesh is too large as it admits young rabbits. I consider the wiring of each stem quite the most effective, as well as often the cheapest method. The mesh should not be larger than one inch, and each cage should be made large enough to be clear of the bark. If it does touch, it will soon be found that rabbits will take bites from the bark between the meshes, at least, I can vouch for it that the Doddington breed will.

Where wiring is not possible, and untidiness is not unbearable, it is a good plan to leave any branches which are pruned off lying on the ground all the winter. It will be found that the rabbits will gnaw these in preference to the vertical stems, which are less handy for them.

Generally, a tree is safe from attack when it has a stem several years old, but it is hardly safe to rely on this immunity. I shifted some large trees from an unwired area into new ground, and they were attacked immediately. A long spell of frost would very likely render it necessary to protect the largest trees in this district, for during last winter the young growths of Chestnut trees in the woods were skinned over acres of woodland. I had left my prunings lying, and when I observed how cleanly the bark had been gnawed from them, I rejoiced in my good fortune. *E. Brown, Hillside, Doddington, Sittingbourne, Kent.*

VEGETABLE GARDEN.

FORCING EARLY POTATOS.

With the arrival of the New Year, the question of growing early Potatos under glass will need attention.

To have new Potatos so early as possible, tubers should be put into boxes without delay. The boxing of Potato "seed" should be regarded as work of importance, and should not be done in a slipshod manner, for the production of an early crop depends largely upon the condition of the tubers when set. The tubers should be carefully selected, and should be fairly uniform in shape and size. Each should be greened thoroughly by exposure to light, standing them closely together in shallow boxes, with the crown eyes uppermost, so that they will not fall when the boxes are moved about. As the boxes are filled, they should be removed to a warm greenhouse and shaded for a few days. This should induce the sprouts to form quickly, but so soon as the sprouts are fairly started, expose them to the full light so that they grow slowly and become brown and hard. Although some growers advocate producing long sprouts, experience has proved that those about one inch in length are quite long enough, and on no account should the sprouts be of the white, callow kind, for sprouts of this description are liable to be attacked with the disease Macrosporium Solani, while in the sprouting box. This disease generally appears when the tubers are placed in layers instead of upright, and kept in the dark too long.

Early in February, the tubers will be ready for potting into small pots or planting out in the greenhouse border. The material used in either case should be of a leafy nature.

When planting them in borders, small trenches six inches deep and eight inches wide should be made the whole length of the border, and the tubers (whole) planted nine inches apart. Whether the tubers are potted or planted out, they should be covered sufficiently. No earthing up will be necessary.

Previous to planting, each tuber should be dipped in a mixture of freshly-slaked lime and flowers of sulphur in equal parts, the preparation having been made one or two days beforehand. This acts as a preventive agent, and thus a healthy crop is assured.

While the Potatos are making growth, a moist atmosphere and an even temperature of 60° to 65° should be maintained. *G. B.*

PUBLIC PARKS AND GARDENS.

The Lowestoft Town Council will make application for sanction to borrow £11,000 for the development of Nicholas Everitt Park, recently presented to the town by Mr. H. Hollingsworth.

The Radcliffe Urban District Council has agreed to provide recreation grounds in three wards of the town at a total estimated cost of £14,000.

The Redcar Town Council has received sanction to lay-out Locke Park at a cost of £2,500.

The Hull Parks Committee has decided to provide a municipal golf course costing £23,000.

The Consett Urban District Council is making application to the Ministry of Health for sanction to borrow £500 for the purchase of land for a recreation ground.

The Heston and Isleworth Urban District Council has agreed to purchase, for a sum of £3,500, a site of eight acres adjoining Hounslow Barracks, for a public open space.

The Swansea Town Council is recommended to provide a recreation ground in Brynmelyn ward.

SOCIETIES.

ROYAL HORTICULTURAL.

January 15.—As is well-known, the first fixture for the year of the Royal Horticultural Society was abandoned on account of the sudden death of the President, so that the first meeting of the year was held at an unusually late date. With the aid of various exhibits of sundries, several of them quite attractively set out, the Hall in Vincent Square was filled on the present occasion. Orchids were freely shown, and in addition to a collection of very fine Cypripediums, the general collections were of great merit. The Orchid Committee recommended two First Class Certificates and three Awards of Merit to novelties. The chief exhibits before the Floral Committee were miscellaneous stove and greenhouse plants, including particularly good Carnations, early-flowering shrubs and border flowers, and dwarf Conifers of the type valued for the rock garden. The Floral Committee recommended three Awards of Merit to novelties. Although the Fruit and Vegetable Committee had no novelty of moment, there was a magnificent collection of vegetables and two excellent collections of Apples in the hall.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Stuart H. Low, Mr. E. R. Ashton, Mr. T. Armstrong, Mr. J. Cowan, Mr. A. McBean, Mr. Lionel de Rothschild, Mr. Frederick Hanbury, Mr. S. W. Flory, Mr. H. G. Alexander, Mr. T. W. Taylor, Mr. Fred. K. Sander, Mr. A. Dye, Mr. Charles H. Curtis, Mr. J. E. Shill and Dr. G. R. Machado, of Jamaica, a visitor.

First Class Certificates.

Cymbidium Albania (*albanensis* × *Alexanderi*).—A very beautiful addition to a fine class of Orchids. It is of fine colouring, the sepals and petals being a lovely soft shade of rose-pink with slightly darker veins, while the lip is bright rose-red, with numerous small spots and veins of deep velvety red. Shown by Messrs. J. and A. McBean.

Cypripedium Strombole (*Nubia* × *Gaston Bulteel*).—A very fine hybrid, with a bold, wide, rounded dorsal sepal of deep rose colour, with darker reddish-purple shading over the centre. Petals and lip brown and green. The whole flower is lustrous. Shown by Baron Bruno Schröder (gr. Mr. J. E. Shill), Dell Park, Englefield Green.

Awards of Merit.

Cypripedium Littlecot (*J. M. Black* × *Perseus Alpha*).—In this hybrid, the white, green-based dorsal sepal is very heavily blotched with blackish-purple. The petals and lip are glossy green and brown, the former carrying a few blackish spots. Shown by Messrs. Black and Flory.

Cypripedium Windrush var. Mentieth (*Zena* × *Memoria F. M. Ogilvie var. The King.*)—A bold hybrid, of broad and rounded form. The dorsal sepal is a trifle hooded, white, with a green base and heavy spottings of blackish-purple, the spottings being smallest and palest on the white area. The wide petals are rich brown on the upper half and green below. Lip brown and green. Shown by Messrs. J. and A. McBean.

Cypripedium Jungfrau, Brockhurst var.—A fine Cypripedium of bold, upstanding shape, and with a very wide, white, green-based dorsal sepal, with a few pale purple spots over the centre. The petals and lip are pale green. Shown by Fred. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

Groups.

A bank of beautiful Orchids was arranged by Messrs. J. and A. McBean, who had a generous display of Odontoglossums, including forms of O. crispum, O. c. xanthotes, O. Diana, O. majesticum, O. citrinum, the fine O. Mirum and the graceful O. Phoebe. Cymbidiums were also well represented, and there were good examples of Laelia anceps in variety, Vanda coerulea, Cattleya Maggie Raphael alba, Laelio-Cattleya Sunbelle, Vanda Amesiana, Odontiodas and Cypripediums, these last including the charming C. Boltonii and the big, rounded C. Windrush, of fine breadth and colour.

Messrs. Charlesworth and Co. made a very fine contribution, their large group being arranged in graceful fashion, and containing a fine selection of Odontoglossums, Odontiodas and Calanthes. These last were represented by C. Bryan and C. William Murray. A few outstanding Odontoglossums were O. crispum xanthotes, O. Amabilicity, O. Llewellyn var. Colossus, O. Toreador, O. Britannia and O. muralis, while other good things were Vuylstekeara Brewii, Cattleya Thais, Oncidium splendens, O. cheirophorum, Masdevallia tovarensis and a selection of Cypripediums.

S. G. Brown, Esq. (gr. Mr. Thurgood), Brownlands, Shepperton, put up a bright exhibit wherein figured Angraecum sesquipedale, Epidendrum vitellinum majus, a lovely specimen of Oncidium cheirophorum, O. bicallosum, and O. ornithorhynchum. Odontoglossum Penelope, Brownlands variety, was a conspicuous plant, while other interesting kinds included Maxillaria Hubschii, Odontoglossum bictonense, with thirty-six flowers, Gomeza planipes and Cymbidium Tracyanum.

A group of superb Cypripediums was staged by Miss A. B. Moore (gr. Mr. W. H. Page), Chardwar, Bourton-on-the-Water. These were marvellous Cypripediums of wonderful size, shape and colour. In a grand lot, a few outstanding sorts were C. Chrysostom var. Mary Crawford, C. Mrs. Ely var. Derrick, C. Chardmoore var. W. H. Page, C. Gwen Hannen var. Field-Marshal, C. Albert Mercier, C. Sir Trevor var. Chinchinjunga, C. Magna var. Fred Sander, and C. Prince Albert var. Mecca.

Messrs. Cowan and Co.'s group consisted chiefly of bold Cypripediums, with a margin of good examples of Masdevallia Schröderiana. A few leading Cypripediums were C. Ponticus, C. Memoria F. M. Ogilvie var. The Premier, C. Corsair, Holford's variety, C. Marcus, C. Nydia, C. Niobe-Leeanum and C. Golden Wren.

Angraecum superbum was a striking plant in the group arranged by Messrs. Sanders. Vanda Amesiana, the curious hybrid Odontoglossum Longowoyi, Oncidium splendens, and many good forms of Lycaste Skinneri attracted attention, as did the yellow and carmine Laelio-Cattleya Mrs. Medo. Cymbidiums, Cypripediums and Miltonias were also included.

Mr. J. Evans put up a very pleasing exhibit of Cypripediums associated with Masdevallia Schröderiana and Oncidium cheirophorum. A few of the finest Cypripediums were C. Mrs. Ely, C. Major Hanbury Carlile, C. Madame Jules Hye and C. Alcibiades var. Illustris with five splendid flowers.

Messrs. H. G. Alexander showed Cypripedium Imperator, Westonbirt var., C. Macaw, C. Perseus, C. Otus, the pretty C. Juliet, and the colourful C. Baldur, Holford's variety. Cypripediums were well shown by Messrs. J. Cypher and Sons, whose group contained attractive examples of C. Corsair, C. Lathamianum aureum, C. Pixie, C. Ballet Girl, C. Cupid and C. Hercules.

Messrs. Black and Flory, Messrs. Armstrong and Brown, Mr. Robert Paterson, and Mr. Fred. Hanbury, all showed a few Orchids.

Floral Committee.

Present: Section A.—Mr. J. F. McLeod (in the chair), Mr. R. Findlay, Mr. J. M. Bridgeford, Mr. D. Ingamells, Mr. M. C. Allwood, Mr. J. T. West, Mr. W. B. Gingell, Mr. James B. Riding, Mr. D. B. Crane, Mr. C. F. Langdon, Mr. Courtney Page, Mr. B. R. Long, Mr. E. R. Janes and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. G. Reuthe, Mr. Reginald Cory, Mr. Charles T. Musgrave, Mr. F. G. Preston, Mr. L. R. Russell, Mr. Mark Fenwick, Lady Beatrix Stanley, Sir William Lawrence, Bart., Mr. E. H. Wilding, Mr. A. Bedford, Mr. E. A. Bowles, Mr. T. Hay, Mr. Clarence Elliott, Mr. R. C. Notcutt, Mr. R. W. Wallace and Mr. N. K. Gould, Secretary.

Awards of Merit.

Carnation Thomas Ives.—A very large greenhouse variety made up of broad, stout, undulating petals of glowing cerise colour with a rosy reverse. The illustration in *The Gardeners' Chronicle* for December 1, last, gives a good impression of the form of this showy variety. Shown by Messrs. Stuart Low and Co.

Chrysanthemum New Year.—This is a very attractive Single variety of medium size, with two rows of ray florets. The colour is golden amber, with a faint rosy margin and a definite yellow zone. Shown by Mr. H. Shoesmith, junr.

Erica australis var. Mr. Robert.—This pure white form of the well-known Erica australis was found in the mountains of southern Spain, near Algeciras, in 1912, by the late Lieut. Robert Williams (son of Mr. J. C. Williams, of Caerhays Castle, Cornwall), who was killed in the late war. This white variety flowers rather earlier than the species, and has a more compact habit. Shown by Messrs. Robert Veitch and Son.

Groups.

In a very attractive group of miscellaneous stove and greenhouse plants, Messrs. L. R. Russell, Ltd., included well-flowered plants of Epiphyllum Makoyanum, Strelitzia Reginae, various Bromeliads and Camellias. Messrs. Stuart Low and Co. grouped tall specimens of Acacia Baileyana, A. albens and other Mimosas, with Camellias, Acokanthera (Toxicophlaea) spectabilis and small plants of the golden-leaved Oleander. A large, floor group of Euphorbia (Poinsettia) pulcherrima was contributed by the Hon. Vicary Gibbs (gr. Mr. Edwin Beckett), Aldenham House, Elstree. In addition to the scarlet species there were many plants of the white and the pale rose-coloured varieties.

A very interesting exhibit of early-flowering shrubs was made by Messrs. Robert Veitch and Son. They had generous branches of Hamamelis mollis, H. arborea, Garrya elliptica, Grevillea rosmarinifolius, and Parrotia persica, with dwarf plants of Daphne japonica and various Camellias. Mr. George G. Whitelegg arranged a very good collection of dwarf Conifers, including the Irish Juniper, various species of Pines, Cupressus and Taxus, and also had heavily-berried branches of Pernettya mucronata. Mr. Stephen Sim also had shapely little Irish Junipers and other Conifers, with the bright yellow Primula Barrowby Gem. Messrs. Patrick staged various interesting hardy shrubs including Erica mediterranea, shrubby Veronicas, Viburnum Tinus, Berberises and Conifers. Mr. J. Klinkert had a collection of shapely topiary specimens in evergreen Box.

Messrs. Barr and Sons showed a pretty collection of early border flowers, which included Galanthus byzantinus, Crocus reticulatus, Iris alata, and an excellent strain of blue Primroses. In the background there were sprays of brightly coloured Eleagnus pungens aurea and, at one end of the group, they had a dozen or more plants of Lachenalia pendula of rich colour.

Especially good greenhouse Carnations were shown. Messrs. C. Engelmann, Ltd., included such valuable Fancy varieties as Katja, Circe Improved and Moggy. Messrs. Stuart Low and Co. had a large vase of the vividly coloured Thomas Ives, and also the pink Eileen Low in quantity. Messrs. Allwood Bros. staged, in Wivelsfield Buttercup and the pale salmon Guy Allwood, two of their 1929 varieties, and had a large selection of Dianthus Allwoodii.

There was a large number of exhibits of paintings and garden plans, horticultural sundries and garden furniture. Among exhibitors of paintings were Miss Winifred Walker, whose picture of "Flowers of Southern California" attracted considerable attention; Mrs. Ellenor S. Ough, Miss Agnes Strickland, Miss Edith A. Andrews, Miss Julia Fielding, Miss E. Frances Drake, Miss Alice F. Wilkinson, Mrs. M. Townsend, Miss Marion Broom and Miss Ellen Warrington. Garden designs were displayed by Messrs. S. and G. Paris, Mr. Percy S. Cane and Messrs. Bakers;

Messrs. **Boulton and Paul, Ltd.**, had examples of glasshouses and garden frames, and there were numerous garden baskets, wheel-barrows, etc., from the Lord Roberts Memorial Workshops. Summer-houses and garden ornaments were exhibited by Mr. C. White, while there was also an exhibit of the " Noelite " garden paving tiles.

Fruit and Vegetable Committee.

Present: Mr. C. G. A. Nix (in the chair), Mr. H. S. Rivers, Mr. J. Basham, Mr. T. Pateman, Mr. A. W. Metcalfe, Mr. W. F. Giles, Mr. J. Wilson, Mr. H. Prince, Mr. E. Beckett, Mr. A. Poupart, Mr. W. H. Divers, Mr. J. Cheal, Mr. E. A. Bunyard and Mr. A. N. Rawes, Secretary.

Several seedling Apples were shown before this Committee, which expressed the wish to see a tree of a seedling with large, culinary fruits of the Lane's Prince Albert type, next autumn. This seedling was shown by Mr. G. Wratten, Bembridge, Isle of Wight.

Groups.

At this season of the year one would hardly expect to see so fine and representative an exhibit of vegetables and salads as that set up by Messrs. Sutton and Sons. There were magnificent heads of Broccoli Sutton's Early Roscoff, pillars of fine " buttons " of Brussels Sprouts Sutton's Fillbasket, Dwarf Gem and Matchless; Carrots, both long and stump-rooted; Mushrooms, Celery, Kale, Savoys, Marrows, Parsnips, Beet, Onions and Potatos, all in several varieties, while among salads were Endive, Cress, Chilies, Oxalis crenata tubers, Cucumbers, various types of salad Potatos, Lettuce, Dandelion, Chicory, and Stachys tuberifera. A grand display of splendidly grown and excellently staged produce.

Two splendid collections of Apples were staged at this meeting by Messrs. George Bunyard and Co. and Messrs. J. Cheal and Sons, Ltd., respectively. In both instances the fruits were richly coloured and in good condition.

Messrs. George Bunyard and Co., showed exceptionally good examples of Lord Derby, Ontario, Allington Pippin, Ellison's Orange, American Mother, Cox's Orange Pippin, Emperor Alexander, Hormead's Pearmain, Court Pendu Plat, Orlean's Reinette, May Queen, Lord Hindlip and Lady Henniker.

In the comprehensive collection of Apples staged by Messrs. J. Cheal and Sons, Ltd., we noticed large baskets of grand specimens of Prince Albert, Beauty of Kent, Annie Elizabeth, Newton Wonder, Encore, Blenheim Pippin and Crimson Bramley; while other varieties well represented were Brownlee's Russet, Rival, Chelmsford Wonder, Lady Henniker, Wagener, Christmas Pearmain, Cornish Aromatic, Crawley Beauty, King George V, Ellison's Orange, Sir John Thornycroft, Charles Ross and American Mother, to mention but a few.

GUILDFORD AND DISTRICT GARDENERS'.

In furtherance of the educational work carried out by this Association, two meetings for lectures were held during December, 1928, one on the 10th and the other on the 31st.

On the first occasion, three members read short papers on subjects with which they were well qualified to deal. Mr. A. J. Joy dealt with Cyclamens, Mr. J. Mackay, The Hill, Witley, with Orchids, and Mr. T. Newman, Tangley Place, lectured on the cultivation of Onions. Although comparatively short, the papers were full of valuable cultural details. Mr. Mackay, to illustrate his lecture, displayed a number of splendid Orchid blooms. The Onion crop in the Guildford district was very poor last season owing, chiefly, to the ravages of the Onion maggot, therefore considerable interest was aroused by Mr. Newman's lecture. He stated that the only Onion fly preventive he ever used was sulphate of ammonia applied twice during the season, when the seedlings were just above the soil, and again a fortnight or three weeks later. Autumn-sown plants, when replanted, also receive a sprinkling.

On December 31, the attendance was below the average. Mr. Taylor, of Messrs. Sutton and Sons, Reading, was the lecturer. His subject being " Salads all the year round."

In order to produce such a supply, Mr. Taylor stated that among the indispensable subjects, were Beetroot, Chives, Corn Salad, Chicory, Celery, Celeriac, Mustard and Cress, Cucumbers, Curled and Batavian Endive, Lettuce, Onion, Radish, Winter Radish, Tomato, Sorrel and America Cress.

He gave hints on the best varieties, and how to cultivate them, and illustrated his lecture with lantern slides, some of them beautifully coloured.

The next lecture will be on Tuesday, January 22, when Mr. Lavender, of Messrs. James Carter and Co., will speak on "Annuals." A whist drive will be held on January 23, and a New Year's social gathering on the 30th inst.

READING GARDENERS'.

The annual meeting of the above Association was held in the Abbey Hall on December 7, 1928, and was presided over by Mr. H. Reeves, Chairman of Committee.

The statement of accounts and annual report, as read by the Hon. Treasurer and Hon. Secretary, respectively, showed that the Association was in a most flourishing condition. The membership has been well maintained and the financial position was very sound. The membership totals 310, and the balance in hand came to £113.

The following officers were elected for 1929 :—President, Mr. Frank E. Moring; Vice-Presidents, Mr. Leonard Sutton, Mr. Alderman F. B. Parfitt, Mr. E. P. Foquett Sutton; Hon. Treasurer, Mr. A. H. Leaver; Chairman, Mr. W. Broomfield; Vice-Chairman, Mr. E. Blackwell; Hon. Secretary, Mr. H. G. Cox (80, Hamilton Road, Reading); and Hon. Assistant Secretary, Mr. E. J. Dove.

The Committee elected is composed of Messrs. C. Cook, H. H. Fulker, C. Moulton, P. H. Reed, H. Reeves, and F. Townsend (Reading); G. Carter (Mapledurham); M. Goddard (Bear Wood); W. Chislett (Bill Hill); A. W. Gower (Calcot); F. J. Green (Aldermaston); H. H. Cook and J. R. Lloyd (Shinfield); C. J. Howlett and C. S. Clacy (Earley); J. Young and T. Butcher (Norringham); Dow (Sulhamstead); J. Wynn (Checkenden), and H. Goodchild (Caversham).

NORTH OF ENGLAND HORTICULTURAL.

This Society has arranged with the Harrogate Corporation to hold its spring show in the Winter Gardens—the old meeting place—on April 3 and 4 (the Wednesday and Thursday of Easter week), when, as the town is always full of visitors at that period, good business may be looked forward to. As the space available is strictly limited, intending exhibitors should apply at once to the Acting Hon. Secretary for space required, and at the same time state the nature of their exhibit. Arrangements for the autumn show are not yet completed, but will be notified so soon as possible.

Mr. W. A. Taylor, Gresford, Harrogate, is the Acting Hon. Secretary.

Obituary.

Thomas Jones.—We learn with regret of the death of Mr. Thomas Jones, following a long illness. Many of our older readers will remember Mr. Jones as gardener at Elvetham Park, where he served the fifth and sixth Barons Calthorpe in the 'seventies and 'eighties of last century. After leaving Elvetham, he had a varied and disappointing experience, in nursery work, as a market gardener, and as a hotel proprietor; the war period treated him badly, and then came illness and suffering that ended in his death on December 17 last. The remains were placed in the grave of his wife, in Fleet Churchyard, Hampshire, on December 22.

ANSWERS TO CORRESPONDENTS.

Hyacinth Bulbs Diseased.—*W. S.* The Hyacinth bulbs were attacked by (1) a fungus rot of the basal plate, due to Fusarium; (2) bulb mite, and (3) Collembola. The affected bulbs should be removed at once and burnt. There is no remedy against this Fusarium rot; the mites and Collembola are secondary causes of the internal decay. Soil in which diseased bulbs have been grown should be sterilised.

Leaves of Carnation Curling.—*T. S. C.* The Carnation cuttings show clearly that the plants have received a decided check in growth, the result of which is the production of curled foliage at the end of the shoots. It is not uncommon to find this phenomenon occurring on plants during the winter months. Draughts and sudden falls in temperature cause the trouble. The plants should grow satisfactorily in the spring. Careful attention should be paid to ventilation and firing during such weather as we are at present experiencing, *i.e.*, with great variations in temperature from day to day.

Licences for Gardeners and Under-Gardeners.—*W. S.* Under the Inland Revenue Act 1869, a licence is required for all " gardeners " and " under-gardeners " solely employed by a private employer. Whether a workman employed all his time in working in a garden is or is not a gardener or under-gardener or a person employed in any compacity involving the duties of a gardener or under-gardener within the Act, is a question of fact to be decided by the Justices on the evidence submitted to them. The mere employment in a garden of a man doing work which a single-handed gardener would have to do, does not necessarily make the man a gardener, and Justices, in deciding the point, are entitled to consider whether or not the work done by him is work for the proper execution of which skill in gardening is required.

Names of Plants.—*A. P., Reigate.* 1, Veltheimia viridiflora; 2, probably a Cypripedium villosum hybrid; 3, Cryptomeria japonica elegans; 4, Cypripedium villosum; 5, Cupressus Lawsonia albo-spica; 6, 7, 8 and 9, Calanthes (flowers badly damaged in post and not recognised); 10, Cupressus pisifera squarrosa; 11, Juniperus communis; 12, Cupressus obtusa; 14, Cupressus lusitanica. —*G.* 11, Euonymus japonicus var. albo-marginatus; 12, Viburnum Tinus (Laurustinus); 13, Hedera colchica var. variegata; 14, Hedera colchica var. amurensis; 15, Hedera colchica var. variegata; 16, Osmunda regalis; 17, Helleborus foetidus; 18, Helleborus sp. The specimens were all so scrappy that definite identification was difficult.

Securing Seeds of Abies.—*H. R.* If you keep the cone in a warm atmosphere the scales will soon come apart and the seeds fall out. The seeds should germinate satisfactorily if sown in the open, but as you will have only a few, we would advise you to sow them in a pot, cover them with a pane of glass, and place them under a north wall.

Strawberries Failing.—*A. S.* So far as could be determined, the Strawberry plant is free from attack of any pathogenic organism, and there is no sign of attack by insects or other animal. The rootstock and crown were healthy—the suggestion is that the trouble is due to the deterioration of the stock from which the runners were obtained. Send a specimen—a whole plant—during the active growing season if the trouble continues.

Communications Received.—D. C.—A. C.—P. S.—R. B.—C. H. A.—A. U.—T. J. M.—J. R.—A. S.—W. A.—B. O. M.—K. Y.—D. H.—F. G.—C. H.

SCHEDULE RECEIVED.

Scottish National Sweet Pea, Rose and Carnation Society.—Exhibition of Sweet Peas, Roses and Carnations, in the Kelvin Hall, Glasgow, on Wednesday and Thursday, August 7 and 8; Grand Provincial Show, in conjunction with the Royal Horticultural Society of Aberdeen, at Hazlehead, Aberdeen, on Thursday, Friday and Saturday, August 15, 16 and 17, 1929.—Secretary, Mr. John Smellie, Westwood Cottage, Helensburgh.

THE
Gardeners' Chronicle

No. 2196.—*SATURDAY, JANUARY* 26, 1929.

CONTENTS.

Abbey Wood, Woolwich ... 55
Alpine garden—
  Bellium minutum ... 60
  Houstonias, the ... 60
Awards, R.H.S. ... 55
Bateson, William ... 62
Birkenshaw, Mr. A. ... 56
Bolting, on 55
Bracken disease in Scotland 56
Flower garden—
  Cynoglossum amabile 60
  Early-flowering Chrysanthemums ... 60
Forestry grants, increase in 57
Fruit garden—
  Cordon Pears ... 68
Indoor plants—
  Cinerarias 61
John Innes Centenary Conference 56
Lilium philippinense var. formosanum ... 63
Lindley Library, additions to 66
Market Fruit Garden 68
Meconopsis Baileyi, the status of 66
Notice of book—
  American fruit-growing 63
Obituary—
  Curtis, William ... 70
  Duthie, R. A. ... 70
Primula, the genus ... 66
Rodents, fluctuations in the numbers of ... 55
Scarborough Park ... 55
Societies—
  Manchester and North of England Orchid 69
  National Rose ... 70
  Parks and Botanic Gardens Superintendents' 69
  Royal Horticultural 69
Stanmore, new park for 55
Trees and shrubs—
  Parrotia persica ... 60
  Salix lanata ... 60
Vegetable garden—
  Peas for early sowing 68
Week's work, the ... 58
Welsh garden, notes from a 64
Yellow Day Lilies in America 65

ILLUSTRATIONS.

Birkenshaw, Mr. A. 56
Chrysanthemum New Year 59
Cymbidium Albania 57
Cypripedium Strombole 61
Hemerocallis Lady Fermoy Hesketh 65
Lilium philippinense var. formosanum at Castle Kennedy 62, 63, 64

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 38·9°.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, January 23, 10 a.m. Bar. 30·4. Temp. 38°. Weather, Overcast.

On Bolting.

All field and garden plants derived from species of biennial habit. show, to a greater or less degree, a tendency to rush their development so as to bring it to the flowering stage within one season. The expression of this aptitude of biennials to behave as annuals, known as bolting, is manifestly influenced by seasonal conditions. Last year, for example, bolting was well marked among Beet, Onion, Leek and other garden and field crops. The bolting of a crop is, or may be, the occasion of serious loss, for, inasmuch as growth of flowering stem tends to deplete the stores of food material which would otherwise be laid down and conserved in the "root," these stores in the bolting plant will tend to become smaller and of lessened food value. It is a good many years since the late Dr. William Bateson turned his attention to the subject of bolting, and although he never published the results of his investigations, it was known to those associated with his work that he had accumulated a large amount of valuable information on the subject. This information has now been made available in a paper* published by Sir Daniel Hall, who, as our readers know, succeeded Bateson as Director of the John Innes Horticultural Institution. Bateson's work related chiefly to the cultivated forms of Beta maritima—Mangold, Sugar Beet and Garden Beet, and its object was to ascertain to what extent bolting is due to inherited characteristics as opposed to climatic influences. That climatic conditions play a large part in encouraging bolting is easily demonstrated. Early sowing, or a check to growth, may raise the percentage of "bolters" far beyond that which obtains when the plants are sown later and suffer no check in growth. For example, Bateson showed that if Beet or Mangold are sown under glass early in the year and are transplanted into the open about April, some seventy per cent. of the plants will bolt. Starting from the fact that even under such conditions so favourable to bolting some thirty per cent. of the plants resist the temptation, he proceeded to investigate the genetical character of the non-bolters. By selection from the latter, continued for two or three generations, he was able to isolate strains which show no bolting under ordinary field or garden conditions. It therefore follows that climatic conditions are not the only predisposing cause of bolting, but that hereditary characteristics also play a part. From a practical point of view, these conclusions are, of course, of great importance, for they pave the way by following which our seedsmen may, in course of time, provide us with strains of garden plants which behave as true biennials and refuse to try to become annuals, even when prompted so to do by seasonal conditions. As Sir Daniel Hall points out in the summary to his interesting paper, Bateson recognised that resistance to bolting does not depend on a single factor, but on several. This, no doubt, makes the task of selecting non-bolting strains somewhat more arduous, nevertheless, it is one which will probably prove well within the powers of practical plant breeders.

Lists of R.H.S. Awards.—The Royal Horticultural Society has recently published the official lists of awards made by it to Orchids, decorative plants, fruits and vegetables, during the years 1925 and 1926. The list of awards to Orchids (a separate publication) supplements those published by the Society in 1916 and 1926, while the list of awards to decorative plants (except Orchids), fruits and vegetables, is issued as a supplement to that giving awards up to 1924. For reference purposes, these lists (edited by Mr. Fred. J. Chittenden) are very useful, and may be obtained from the Society's office, Vincent Square, Westminster, S.W.1, price 1s. each.

The Ideal Park.—At the meeting of the Association of Parks and Botanic Gardens Superintendents (London Branch), to be held in the Lecture Room, at the R.H.S. Hall, Vincent Square, London, on Tuesday next, January 29, Mr. A. J. Ashmore (Chairman of the London Branch of the Association) will deliver a lecture entitled "The Ideal Park." The chair will be taken by Mr. H. Prentice, at 7 p.m. prompt. This lecture should prove of great interest to all parks representatives and horticulturists generally, to whom a hearty invitation is extended.

Vegetable Cultivation.—A new volume, *The Cultivation of Vegetables* (Sectional Vol. No. 12, price 1s. 3d. post free, obtainable from the Ministry of Agriculture, 10, Whitehall Place, S.W.1), has been added to the Ministry's series of sectional volumes of collected leaflets. This is a booklet of commercial vegetable production written specially for market growers. The methods of production described are those which have proved successful for market growers and the varieties suggested are known to be suitable for most markets. At the same time, the volume contains very sound advice for the private grower or allotment holder. The information contained in the leaflets has been condensed so far as possible, and simple language has been used. Several of the leaflets have been specially written for the volume, *e.g.*, those on Shallots, Leeks, Seakale, Rhubarb and Salad vegetables. Other vegetables dealt with include Cabbages and Savoys, Brussels Sprouts, Peas and Beans, the Vegetable Marrow, Parsnips, Onions, Mushrooms, Asparagus, Tomatos, Cucumbers and Watercress. In addition, there are leaflets on the general cropping, manuring and cultivation of allotments (with chart), the manuring of vegetable crops, and practical soil sterilisation by heat for glasshouse crops. Diseases and pests of Tomatos and Cucumbers are touched upon, and methods of marketing are also dealt with.

New Park for Stanmore, Middlesex.—A people's park, five-and-a-half acres in extent, is to be purchased at Stanmore Hill, Middlesex, at a cost of £1,550. Of this sum £1,000 is being raised by voluntary contributions from the people of Stanmore, and the remainder will be provided by the Hendon Rural District Council. A local resident, Mr. Samuel Wallrock—an enthusiastic horticulturist, whose successes at Watford were recorded in our issue of November 24, 1928—has undertaken to be responsible for the laying out of the grounds, after which they will be taken over and maintained by the Rural Council.

Developments in Peasholm Park, Scarborough.—The Borough Council of Scarborough has adopted a recommendation of its Parks Committee to construct a Japanese pagoda on the highest part of the island in the lake at Peasholm Park, the building to be in keeping with the Japanese character of other buildings around the lake. A bridge is to span the water which will be made to form cascades ere it reaches the lake, and Japanese stone lanterns will be placed at suitable points on ledges of rock. There is also a proposal to provide artificial lighting so that the whole of these new features may be illuminated after dark. Later, the area around the pagoda will be laid out and planted as a Japanese tea-garden.

Dutch Nurserymen and Spain.—An exhibition of Dutch horticulture is being organised to take place in Madrid some time during the coming spring, probably in April. This interesting event will be a preliminary to the large exhibit which the Dutch hope to send to Barcelona for the great exhibition to be held there next year. The Dutch nurserymen take their occupation very seriously, and their participation in foreign exhibitions always has the effect of raising even higher than before, the general esteem in which their capabilities are held. The former close connection between Spain and the Netherlands makes this particular event especially interesting.

Abbey Wood, Woolwich.—We understand that an endeavour is being made by the Woolwich Borough Council and the Woolwich Regional Town Planning Advisory Committee, to secure the preservation of Abbey Wood, which covers an area of two-hundred-and-fifteen acres, and includes the ruins of Lessness Abbey, together with a group of ancient earthworks, as a public open space. The property at present belongs to several owners, but an option to acquire the whole area has, apparently, been obtained. It is estimated that £20,000 will be required to complete the purchase; the Woolwich Borough Council has agreed to give £1,000 and various other local authorities have been asked to subscribe, while it is proposed to form a representative Purchase Committee, which will issue an appeal for funds. The Abbey Wood area is composed of undulating land and commands a fine view of the Thames estuary, and although very little of Lessness Abbey now remains above ground, the extensive structures below ground are well preserved, and it is suggested that they could be unearthed and preserved under conditions which would safeguard them from deterioration.

Fluctuations in the Numbers of Rodents.—Mr. A. D. Middleton, Department of Zoology and Comparative Anatomy, University Museum, Oxford, writes:—It is a well-known fact that in some years the smaller rodents, notably mice and voles, swarm over large areas of country and become a serious nuisance to farmers, gardeners and others. It has been found that there is a good deal of regularity in the occurrence of these rodent years. Field voles in this country and lemmings in Norway and northern Canada swarm at intervals of a few years, and this is followed by a diminution in numbers which is apparently brought about by epidemic diseases. We are carrying on an investigation into these cycles, and are desirous of obtaining information on the subject from various parts of the country, in order that light may be thrown on their causes and preventive measures devised. The study of the epidemic diseases from which the rodents suffer is also of significance in connection with human and animal pathology. We should be greatly indebted to readers of *The Gardeners' Chronicle* for any information upon the following points :—(1) Any pronounced increase or decrease among field voles, squirrels, or other rodents ; together with dates, localities, etc. ; (2) any disease among rodents ; (3) any increase or decrease in numbers of birds of prey, and of stoats and weasels, in particular years.

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* "Bateson's Experiments on Bolting in Sugar Beet and Mangolds," by Sir A. D. Hall, K.C.B., *Journal of Genetics*, Vol. XX, No. 2, Nov. 1928.

Sutton's Garden Calendar.—Among the several useful publications issued each year by Messrs. Sutton and Sons, of Reading, is a handy *Garden Calendar and Diary.* The garden calendar, in the form of "gardening reminders" for each month, occupies the front portion of the *Diary*, together with instructive articles dealing with annuals for greenhouse and conservatory cultivation ; Strawberry growing ; the making of lawns ; renovating old turf, and garden pests. There are useful lists of hardy annuals, classified according to colour, and of alpine plants which may be raised easily from seeds, together with much other useful data.

Tree-planting of Barnet By-pass Road.—On Saturday, January 19, Lord Ullswater planted the first tree on the Barnet by-pass road, under the scheme formulated by the Roads Beautifying Association. The tree, a Turkey Oak, was planted on a stretch of grassland which fringes the road in front of the Mote Mount Golf Club, Mill Hill, and it is hoped that in time the Barnet arterial road will be fringed with trees along its entire length, from Finchley Road to Welwyn Garden City.

Abnormal Rainfall in Bute.—According to the statistics furnished by Mr. John Davidson, gardener to Sir John Reid, Ardencraig, Rothesay, to the Meteorological Department in London, 1928 provided the highest rainfall recorded on the island of Bute since the observations were instituted 128 years ago. The total rainfall, which amounted to 72·58 inches, is 12·70 inches more than in 1927, and 23·54 inches above the average. January was the wettest month. Rain fell on thirty days, when 10·43 inches were registered, while October came next with 10·31 inches, and April was the driest month with 2·16 inches. To get anything approximating to last year's total, it is necessary to go back to 1811, when the rainfall was 71·37 inches. Rainy days in 1928 totalled 269, and the greatest fall in twenty-four hours was 1·35 inches, registered on November 23.

Unemployed Miners in the London Parks.—Over 200 unemployed miners have arrived in London for work in the Royal Parks, a sum of £200,000 having been voted by the House of Commons in December. It is intended that altogether 700 men shall be brought from the mining areas for this purpose. Some resentment having been expressed by the local unemployed at the miners being given this work, it is explained by the Ministry of Labour that the work is not essential, but has been undertaken solely for the purpose of absorbing the miners, and will be paid for out of the money specially allocated for their relief by the Government.

Legacies to Gardeners.—The late Mr. C. E. B. Young, of Daylesford, Kingham, Oxford, who died on September 22, 1928, left £200 to his head gardener, Mr. T. E. Ward.—The late Mr. C. S. Gray, of Rozel, St. John's Park, Ryde, who died on November 25, 1928, left £50 to his gardener, Mr. Henry Welsh.—The late Miss C. G. Trower, of Stansteadbury, Stanstead, Hertfordshire, who died on November 8, 1928, left an annuity of £20 to her gardener, Mr. Marrable.—The late Mr. John Smith, of Kewhurst, Little Common, Bexhill-on-Sea, who died on November 5, 1928, left £52 per annum to his gardener, Mr. James Law, for long and faithful service.

Acreage of Varieties of Potatos in Scotland, 1928.—The Department of Agriculture for Scotland intimates that thirty-six-and-a-half acres of Potatos of the variety Arran Banner were inspected and certified by them during the season 1928. It is regretted that owing to errors made by certain occupiers of farms in filling up the schedule for returns of varieties planted, the acreage of this variety was given in the table published by the Department on October 1, 1928, as eighty-one acres. Arran Banner was registered by the Department in the year 1927 as a new, immune, early maincrop variety.

Mr. A. Birkenshaw.—Among those of the "younger generation" who have gained distinction in the realm of horticulture is Mr. A. Birkenshaw, whose appointment as Superintendent of the Public Parks at Preston was announced recently. Mr. Birkenshaw joined the garden staff of the Royal Horticultural Society's Gardens at Wisley soon after the termination of the war, as a journeyman in the fruit houses. Upon leaving Wisley, where he had risen to the post of leading journeyman, he went to the Royal Botanic Gardens, Kew, and from there, in 1923, he moved to Manchester, having secured an engagement under the Manchester Parks Department. At Manchester, Mr. Birkenshaw's early training at Wisley, coupled with the further knowledge gained at Kew, stood him in good stead, for he was soon given a responsible position. He was appointed head of the Birchfields Park, a post which carried with it the superintendence of nine of the smaller open spaces of Manchester, and it was no doubt the masterly efficiency which he displayed in the exercise of his duties in this capacity, that secured for him the coveted post of Superintendent of the Preston Public Parks. Mr. Birkenshaw took over his new duties on the 2nd instant, and we wish him every success.

MR. A. BIRKENSHAW.

John Innes Centenary Conference.—On Saturday, January 19, the centenary of the birth of John Innes, the founder of the John Innes Horticultural Institution, was celebrated at the Institution by holding a conference on "Polyploidy," a subject which has received particular attention by the staff of the Institution during recent years. Sir David Prain occupied the chair, supported by Sir Daniel Hall, the present Director, and there was a large attendance, many prominent botanists and horticulturists being present. Prior to the commencement of the conference, Mr. Ernest Innes, a nephew of the founder, gave a brief outline of the life and work of John Innes, and of the events which resulted in the foundation of the Institution. As an introduction to the conference, Mr. J. B. S. Haldane described the meaning of the subject to be discussed, *i.e.*, polyploidy, and he was followed by Dr. C. C. Hurst, whose subject was "Polyploidy in the Genus Rosa," although he did not confine his remarks to Roses. His lecture, limited to fifteen minutes, was followed by an interesting discussion, resulting from Professor E. W. MacBride, an eminent zoologist, challenging the remark made by Dr. Hurst to the effect that he considered polyploidy had played a large part in evolution. Professor R. R. Gates next gave an account of "The Origin of Polyploids," while other aspects of the subject were dealt with in turn by Mr. J. B. S. Haldane, who spoke on "Laws of Inheritance in Polyploids" ; Dr. C. D. Darlington, whose subject was "The Importance of Chromosome Behaviour in Polyploids" ; Dr. C. L. Huskins, who gave an interesting account of "Polyploidy in Cereals" ; Dr. F. W. Sansome, who spoke on "Polyploidy in Tomatos" ; and Mr. M. B. Crane, whose subject was "Polyploidy in Strawberries, Rubus and Prunus." Keen interest was displayed by all present throughout the Conference, and after tea, kindly provided, Miss Caroline Pellew gave a demonstration in the laboratory of the progress of investigations concerning the allo-polyploid Primula kewensis, and species hybrids. A report of the Conference will appear in our next issue.

British Mycological Society.—A London meeting of this Society will be held at University College, Gower Street, W.C.1, on Saturday, January 26, 1929, at 11 a.m. The speakers and subjects are as follow :—Miss D. M. Cayley, "Some Observations on Mycetozoa of the Genus Didymium" ; Mr. A. Chaston Chapman, F.R.S., "A New Species of Oidium" ; Miss E. H. M. Farries, B.Sc., "An Investigation on the Metabolism of Nematospora Gossypii, Ashby and Nowell" ; Mr. M. Mitra, "Phytophthora parasitica, Dast., as a Parasite on Cotton Seedlings and Guava Fruits" ; Dr. Alex. Smith, "Observations on Puccinia Menthae, Pers." The authors' names are arranged alphabetically ; the papers will be given in the order most generally convenient. Lunch will be arranged in the College Refectory.

Bracken Disease in Scotland.—Widespread evidence of a fungus disease in Bracken in Scotland, together with the research work that is being done in the direction of encouraging the natural enemy of the pest, is contained in a pamphlet published by the West of Scotland Agricultural College, Glasgow. It is the work of Mrs. N. L. Alcock, the plant pathologist of the Board of Agriculture, and Professor K. W. Braid, of the Botany Department of the West of Scotland Agricultural College, and covers the period of ten years that have elapsed since the discovery of a definite disease affecting Bracken on a farm near Maybole, Ayrshire, was given publicity by Mr. John McGill, of Ayr. One of the main points revealed in the report is that the year 1928 has disclosed a widespread disease which appears virulent, can spread rapidly, and apparently is perfectly innocuous to tree life. From the reports received from research workers during the past summer, the distribution of the disease appears to be spread over the whole of Scotland south of a line through Loch Rannock. The possibilities are accordingly of real moment to Scottish Agriculture. Bracken encroaches rapidly upon valuable grazing lands, smothering grasses and other herbage. In young plantations it is equally destructive, for it shades the young trees in summer and smothers them in carpets of dead fronds in autumn and winter. The problem of extermination, short of encouraging a war on the part of nature herself, is a costly one. By the process of cutting it takes from three to seven years to eradicate the pest, and the cost, varying from 10s. to 30s. per acre, is prohibitive in most cases, as the land affected is usually of a small annual value. Bracken, it is explained, is a pest of almost world-wide prevalence.

Parasitic fungi on the stem are negligible, possibly because, except in early youth, the Bracken is too hard and dry. In the case of the disease found near Maybole, a curious dying-back of Bracken occurred over a fairly wide area. In this instance, the fungus was not isolated, but there seems good reason to believe the cause was the same as in other areas since observed. There the first phase of disease is past; all the juicy, lush Bracken has succumbed and only small, hard fronds exist. The second phase of the attack is a siege, with repeated rallies directed against the young and tender fronds. Already the grass is responding markedly. Reference is also made to outbreaks of the disease at Langholm, Garelochhead and Arran. At the latter place the Bracken was breast high three years ago and it is now dwindling gradually. In the cases specified the destruction of the current year's plant has been followed by the stimulation and growth of a smaller frond, apparently next year's. In many instances this has succumbed to the disease also and a very small frond measuring two to three inches only has appeared. So far as could be ascertained, this was the frond of 1920. The latest stages are reported from Bridge of Urr, Dalbeattie, where the areas infected a few years ago are now practically destitute of Bracken. In places, now herbage covered, abundant remains of the old underground stems can be dug up. Whether in each case it is the same fungus, or whether a normally saprophytic fungus has become an active parasite, cannot be stated with certainty. There appears to be different degrees of virulence. This may mean that there are different strains of a fungus, or that certain Bracken plants are more susceptible than others, or, again, that some external factors are influencing the natural immunity of the Bracken. In their conclusions, the authors state that it has still to be definitely proved what the fungus is and exactly what it does. It is not certain that the disease will appear another year with the same intensity, and while no promise of immediate extermination of the Bracken is made, the attack, even already, looks more hopeful. No hope of exterminating all Bracken from every area is entertained, but if disease kills some of the Bracken, man must step in and destroy the remainder.

Rainfall at Tirley Garth Gardens, Tarporley, 1928.—The rainfall in these gardens during 1928 amounted to 32·35 inches, or 4·16 inches below the total fall in 1927. The heaviest rainfall in the twenty-four hours occurred on June 7, when ·97-of-an-inch was registered. May and September were the driest months, with only 1·48 inch each. In June, the rainfall amounted to 5·15 inches, this being the wettest month of the year, with twenty-four rainy days. There were 228 days in which ·01-of-an-inch or more was registered, and 170 days in which ·04 or more was recorded. The driest period was from July 7 to July 20, when there were thirteen clear, dry days. The hottest day was on July 15, when the temperature rose to 84° in the shade. The coldest day was on December 14, when 13° of frost were registered. There were 138 days on which no rain fell. On the whole, 1928 was a good year at Tirley Garth, with abundance of healthy crops. Fruits of all kinds were plentiful.

Queen Marie of Roumania and Her Gardens.—The January number of the Roumanian gardening journal, *Revista Horticolă*, has an interesting portrait frontispiece representing Queen Marie of Roumania in her beautiful garden at Balcic. Beneath the portrait is a facsimile signature of the Queen, and her message to Roumanian horticulturists, in Roumanian and French: "Between those who grow flowers there is a harmonious bond of fraternity." It is well-known that Queen Marie has a passionate love for gardens, and takes an active interest in the planning and upkeep of her own gardens in various parts of the kingdom. Each of the gardens has its own characteristic; for instance, at Bran, Dahlias are chiefly grown; at Balcic, which is on a rocky eminence above the sea, there is almost unlimited scope for landscape effects, and of this fact full advantage has been taken with very beautiful results. Queen Marie takes a very profound interest in the affairs of the Roumanian Horticultural Society, and in Roumanian horticulture generally. She is keen on inducing growers to produce a greater variety of flowers, instead of concentrating, as the tendency is at present, on a few lines such as Chrysanthemums and Cyclamens, both of which do remarkably well in the climate prevailing in that part of Europe.

Increase in Forestry Grants.—We understand that the Government has undertaken to ask Parliament to vote a total sum of £5,500,000 to the Forestry Commission on agreed annual instalments during the ten years commencing on April 1 of this year. The sum provided during the last ten years was £3,500,000. The Commission, it is estimated, will also derive an increased revenue from all forest products to a total of about £1,400,000, as compared with £775,000, the estimated figure for the first ten years. It is expected that this increase in income will enable the Commission to lay down 225,000 acres of new plantations, to devote £1,000,000 to forest workers' holdings, and to make grants for other forestry purposes, including the planting of municipal and private land with timber trees, and forestry education and research.

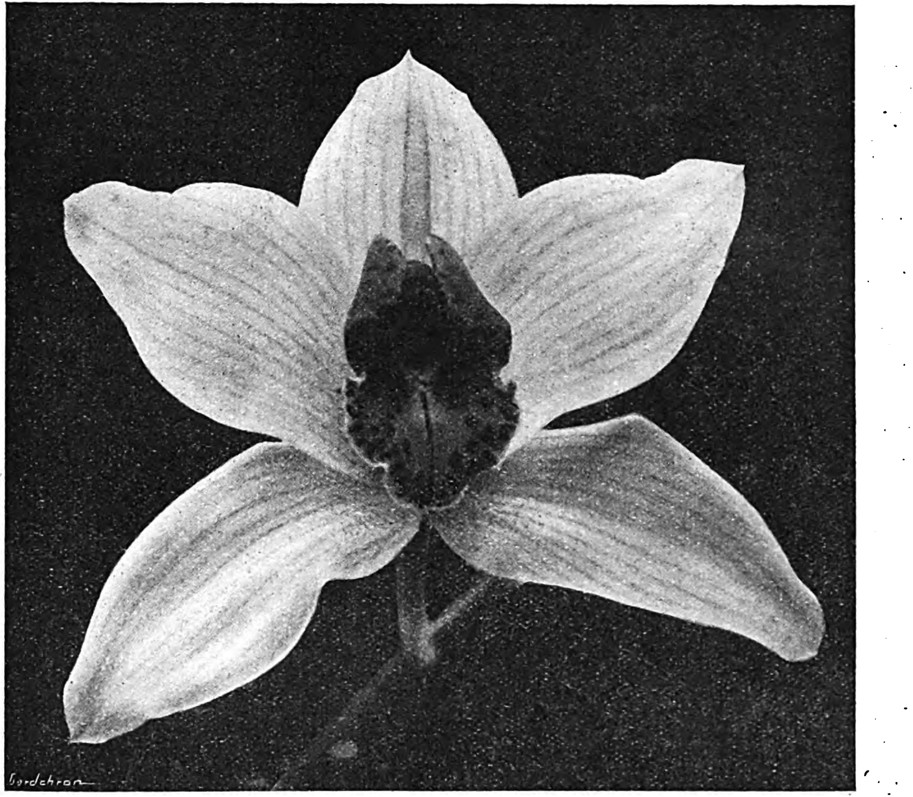

FIG. 29.—CYMBIDIUM ALBANIA.

R.H.S. First Class Certificate, January 15. Flowers pink, rose-pink and red. Shown by Mrs. Carl Holmes (gr. Mr. W. J. Penton), The Node, Welwyn, Herts.

(Described on p. 53, and stated, in error, to have been shown by Messrs. J. and A. McBean).

Appointments for the Ensuing Week.—Monday, January 28: East Anglian Institute of Agriculture's lecture; Birmingham and Midland Gardeners' Association's lecture. Tuesday, January 29: Royal Horticultural Society's Committees meet; Horticultural Club's dinner and lecture; Royal West Renfrewshire Horticultural Society meets. Wednesday, January 30: Kingston and Surbiton Chrysanthemum Society meets. Thursday, January 31: Brighton, Hove and Sussex Horticultural Society's Annual Meeting; London and South of England Viola and Pansy Society meets; British Florists' Federation's Annual Meeting and dinner. Friday, February 1: Manchester and North of England Orchid Society's exhibition; Dundee Horticultural Society's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Spring Flowers in the North of China.*—In the north of China, there are a number of plants which have their flower-buds very prominently developed in autumn, so much so that they are ready to burst into bloom before the winter has quite passed by, or, at all events, on the first dawn of spring. Amongst these Jasminum nudiflorum occupies a prominent position. Its yellow blossoms, which it produces in great abundance, may be seen not infrequently peeping out from amongst the snow, and reminds the stranger in these remote regions of the beautiful Primroses and Cowslips which grow on the shaded banks of his own land. Nearly as early as this, the pretty, Daisy-like Spiraea prunifolia, the yellow Forsythia viridissima, the lilac Daphne Fortunei, and the pink Judas Tree, become covered with blossoms, and make our northern Chinese gardens extremely gay. There are also some good Camellias which flower at this time, but they are generally grown in pots under such shelter as mat sheds and other buildings of a like kind can afford. The double-blossomed Peach, of which there are three very distinct varieties now in England, are, perhaps, the gayest of all things which flower in early spring. Fancy, if you can, trees fully as large as our Almond, literally loaded with rich coloured blossoms, nearly as large and double as Roses, and you will have some idea of the effect produced by these fine trees in this part of the world. On the south-west side of Shanghai there are numerous Peach gardens studded over the country. These are well worth a visit in the month of April, as the trees are then in full bloom, and have a charming effect upon the landscape. It is in this part of the country where the celebrated Shanghai Peach is largely cultivated. *Robert Fortune, Gard. Chron., January* 28, 1854.

Publications Received.—Report and Summary of the Results of Experiments at The Agricultural Institute, Kirton, during 1927.—*Le Rosier Historique: Culture en plein air et sous verre*, by Edm. van Cauwenberghe.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE, Manchester.

Semi-deciduous Dendrobiums.—The earliest plants of this group, which are resting in a cool house, should now be showing flower buds, and to extend the flowering season a batch of the earliest and most vigorous plants should be given slightly warmer conditions. Gradually increase the amount of moisture supplied at the roots and in the atmosphere in order to assist the better development of the flowers. Saturation at the roots or in the atmosphere, also a too sudden increase in the temperature, should be avoided, as this often results in the buds turning yellow and falling off. Other batches may be brought on as required; the plants will respond more quickly as the season advances. It is not advisable to allow weak plants to flower, therefore the flower buds should be removed as they appear.

Weather Effects.—The cold and extremely dull weather experienced in most parts of the country during the first half of January, made Orchid-growing rather difficult, as a good deal of fire-heat was necessary to maintain the minimum temperatures required in all divisions, and this consequently necessitated more damping down than is really good for many of the plants, especially in smoky districts where the light has been very poor indeed. The effect of these conditions on the plants is easily noticed, especially on those that have been growing throughout the winter; many cool house Odontoglossums, for instance, the growths of which are soon weakened. These subjects will now require all the light available, together with judicious ventilation and watering to assist them to build up satisfactory bulbs. The importance of securing well-ripened pseudo-bulbs in the autumn is well demonstrated now by the condition of the Cattleyas, Dendrobiums, Coelogynes, Brassias and other pseudo-bulb-producing Orchids. Fully matured and well-ripened bulbs pass through these trying conditions very well, while the partially-made winter growths will require close attention to prevent any damping-off. Fog and sunless days have a marked effect on many flowers. The most satisfactory results are to be seen at this season in the Cypripedium house, where the winter-flowering sorts continue to make a very fine display, in spite of the dismal conditions outside.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Grape Vines.—These should now be in various stages of growth, from bursting their buds to elongating their bunches. If confined to well-drained borders, a second watering with tepid water or weak liquid manure may be needed by old vines to assist the development of the bunches, and should prove sufficient until the Grapes are set. Syringing may be discontinued when all the buds have started, but the walls, paths and borders should be moistened two or three times a day, according to the weather conditions prevailing. As growth proceeds, disbudding and tying in will require daily attention, and each shoot should be pinched at the second or third joint beyond the bunch. When tying down the shoots for the first time, sufficient pressure only should be applied to keep the growths clear of the glass. Remove all but one bunch on each shoot, even on the Muscat vines, for even with this treatment enough and to spare will be left for the crop. When the vines are in free growth, temperatures varying from 55° to 60°, or a little higher, during mild weather at night, and 70° to 75°, rising to 80° after the houses have been closed, during the day, should prove suitable. The vines in the first Muscat house must be kept well syringed, while the temperature, maintained by a gentle circulation of heat, should be between 60° and 65°, according to outside conditions, and during fog or frost, 10° lower at night. The young vines may be bent over to ensure even starting of growth. If grafting or inarching on to any of the old vines is contemplated, the scions, or young vines in pots, should now be placed in gentle heat to set the sap in motion. Bottle grafting may be employed when the vines are in a dormant state, but a little excitement of growth facilitates the union, which may be made at any convenient place near the base of the stock, or upon a strong side-shoot that does not start from a spur. Possibly the best time to attach bottle-grafts is when the vine is in full leaf, after the first flush of sap is over. When the scions have started growing, pinch the shoots of the stock vine back closely, and gradually cut it down as the young canes progress and are able to take up the extra sap thus diverted. Old useless vines may be cut down and used as scions upon which to inarch the green wood of pot vines when the latter have started into growth.

Late Vineries.—If all the vines in the late houses have been pruned, the houses cleaned and the borders top-dressed, they may be kept fairly dry and cool until the first week in March, the outside borders being protected with fresh stable litter or Bracken. Two months' rest is of paramount importance to these; all the ventilators should be kept open, and no plants should be introduced that will not withstand this treatment.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Wall Gardens.—In the process of garden formation, there is often the opportunity of carrying out a scheme of wall gardening. Many existing grass terraces, which require constant attention by mowing during spring and summer, might with advantage be utilised for this fascinating form of gardening. Where stone can be procured easily in the district, that material should be used rather than going to the expense of bringing stone of an entirely different character into use. If the walls are to be, say, from four to five feet in height, it is of great importance to see that a firm and substantial foundation is provided. At least two layers of stones below the surface should be allowed for such walls. When building the walls the stones should all tip a little downwards at the back, as by so doing moisture will find its way more easily to the roots of the plants. All rock walls should be slightly battered, *i.e.*, sloping backwards. This adds considerably to their strength, and there is less chance of them bulging out at any weak part after heavy rains. When building, see that the stones are laid so that they bind each other in the same manner as adopted when building a brick wall. It is equally important that the soil used, both between the stones and at the back of the wall, is of the right material. Good soil at the back of the wall is most essential, as the future welfare of the plant depends on this. If the scheme for planting has been settled before building commences, and the necessary plants are at hand, it will be found a most convenient method to plant as the wall is being built. A moderately thin layer of soil should be placed on the stones and the plants laid out with their roots spread towards the soil at the back. Much larger plants may be used when this method of planting is adopted than when they are put in after the wall is completed, nor will they suffer so much during dry weather in the first season of growth. See that the soil at the back of the wall is made firm as the work of construction proceeds, otherwise heavy rain may cause much damage. For crowning such walls various methods may be employed. Those near formal buildings are best finished with flat coping stones; small plants of Sedums, Saxifrages and Dianthus and other small alpines may be used with effect in the joints. Use may be made of the great variety of dwarf and semi-dwarf shrubs suitable for planting along the top of the wall, or a border, in proportion to the height of the wall and the surrounding ground, may be made and planted with bulbous plants, Irises, etc.

Plants for a Rock Wall.—The choice of material for filling the crevices of the walls is unlimited. Many difficult alpine plants that usually die during winter when planted on the rock garden, will survive many years in the rock wall. A number of the commoner alpines seem to be happy in any aspect and soon make a wonderful display. For the choicer sorts, the proper aspect should be chosen, so far as the wall will allow. Campanulas in such kinds as C. Raineri, C. excisa, C. garganica, and that popular plant of cottage windows, C. isophylla, all do well in a sunny position. Lithospermum prostratum and its variety Heavenly Blue, and L. graminifolium should find a place near the top of the wall where it is moderately cool. Iberis of various sorts are useful, making attractive evergreen hummocks during winter; while Helianthemums, of which there are many good, little-known varieties, should include Ben Nevis, Ben Lui, St. John's College Yellow, Wisley Primrose, The Bride, rubens, Chocolate Blotch, Apricot, Watergate Pink, Ben Ledi, Jock Scott, Fire Dragon and Ben Venue. Aubrietias should be represented by Carnival, Dr. Mules, Prichards' A.1., and Magician. The alpine section of Phlox contains many choice varieties useful for this purpose. Among the best are G. F. Wilson, Vivid, Daisy Hill and nivalis. Phyteuma comosum, Acantholimon venustum, Aethionema grandiflorum and A. Warley Rose, Sedum Lydium, S. spathufolium, Veronica pimeleoides, Wahlenbergia dalmatica, Erinus alpinus, Gypsophila repens, Onosma stellulatum, O. tauricum, Hypericum repens and H. reptans, may all be used, while many of the encrusted Saxifrages should find a home in sunny walls. In the large genus of Dianthus many fine species will be found, which never look better than when clothing the face of a wall. For a northern aspect a few specimens of the beautiful Ramondia pyrenaica and Haberlea rhodopensis and H. Ferdinandi-Coburgi should not be overlooked. These, and the mossy Saxifrages, alpine Auriculas, Androsace lanuginosa, A. Laggeri, Primula marginata, P. viscosa, and Arenaria balearica (known as the Fairy's Carpet), should be given a damp, shady spot.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hatfield, Hertfordshire.

Hippeastrums.—These bulbous subjects may be had in flower over a fairly long period, by introducing them into gentle warmth at intervals of two or three weeks. If it is desired to have some in flower at an early date, a few of the most promising bulbs may be placed in a house with a moderately high temperature. Hippeastrums resent overpotting and disturbance of the roots, and probably most of the specimens will only require top-dressing with rich soil, after removing a portion of the old soil from the surface, and thoroughly soaking them in tepid water. At this season of the year it may be wise to plunge the receptacles in a moderately warm hot-bed of leaves. Very little water will be required until the leaves and roots are growing actively, but it is necessary to spray them lightly with tepid water twice daily when the outside conditions permit.

Flowering Shrubs.—Where pot plants have to be provided in quantity, there is nothing more suitable for this purpose than flowering shrubs, for if carefully selected, they may be had in a large range of colours, while they are neither difficult nor expensive to grow. Among those shrubs most suitable for pot culture are Lilacs, Wistarias, Viburnums, Azaleas (Mollis), Rhododendrons, Laburnums and Prunus triloba, to mention but a few. In the early stages of forcing them, guard against high temperatures, which only encourage the production of weakened growths and flowers of poor quality. There is nothing more suitable than a recently-started Peach house in which to grow these subjects, as the low temperatures to which the Peach trees are subjected in their early stages of growth should suit the development of all flowering shrubs.

Forced Tulips.—Early forced Tulips are sometimes disappointing by reason of their short flower stems. This may be due to various reasons, perhaps the most common faults being the growing of them in too high temperatures, insufficient roots, and too much light in their early stages of growth. Tulips should have their receptacles well filled with roots before they are introduced into moderate heat, when, for a short time, they should be stood under the stage in a partially darkened position. A light layer of moss placed over the pots should assist the plants to make top growth, but the moss should be removed as the flower buds push through it. The extra trouble so taken will be well repaid by the production of long-stemmed, well-coloured flowers, provided the plants are gradually inured to the light when the flowers are about half developed. This method is only recommended for early forcing.

HARDY FRUIT GARDEN.

By Henry H. Cook, Lecturer in Horticulture, Reading University.

Loganberries and Brambles.—These fruits are much appreciated, as they come into season when most of the other small fruits are over. Propagation of them is generally effected by layering the tips of the current season's shoots during early September. If the points of the shoots are buried three or four inches deep, they will produce roots and growth buds immediately. These may be severed from the parent cane and planted, two feet apart every way, in nursery rows for a year. Their permanent situation should be open and sunny, but somewhat sheltered from cutting winds, as when grown in bleak situations the growths are stunted and the berries undersized. In good soil, these subjects produce growths eight to ten feet in length annually; therefore, when being planted, they should be spaced that distance apart, and five to six feet should be allowed between the rows. The growths, which are very strong and rampant, require support. There are various methods of affording this, but the best support I have tried took the form of strong posts, five feet above the ground and six feet apart, to which wire netting, having a three-inch mesh, was securely fixed. The growths were trained out fan-wise and tied to this fence. Each year young canes are produced from the base. These should be tied in regularly between the fruiting canes, the old canes, after fruiting, being removed. The Loganberry, which came to us from America, is most prolific, the fruits being especially valuable for preserving or bottling. The Veitchberry, raised by crossing November Abundance Raspberry with a Bramble, succeeds the Raspberry in season, and the fruits are much larger. Wilson Junior is quite one of the best of the American Blackberries, and may be recommended.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Mushrooms.—Where fresh horse manure can be procured, it should, upon arrival, be placed in a shed and turned occasionally, after which it should be heaped up and left for a few days. This will result in the development of heat, and in two or three days time the manure should be turned again, after which it may be utilised. The Mushroom bed should be made in layers, making each firm as the building of it proceeds, until it is from two- to two-and-a-half feet deep, which should be a suitable depth. Plunge a thermometer into the bed and leave it there for a day or two; when the temperature has fallen to 85° to 95°, insert the spawn and cover the bed with a layer of good loam that has previously been passed through a half-inch-mesh sieve. A layer of loam about two inches in depth should be sufficient, and this should be beaten quite firmly; it cannot be made too solid for Mushrooms. After the spawn has been planted, give the bed a thorough soaking with tepid water and maintain a temperature, if possible, of not less than 55° to 65°. Damp the bed every morning, and when the first Mushrooms appear, which should be about five or six weeks after spawning, cover the bed with a light layer of old hay to keep the surface of the bed moist.

Peas.—Early Peas may now be sown in nine- or ten-inch pots. Place three or four crocks in the bottom of each pot for drainage and some rough pieces of turf. Good loam and a little leaf-mould and decayed manure, well mixed together, should form a suitable compost. A sowing may also be made in the open ground on a south border, where the ground is dry, using a good early variety. Peter Pan and American Wonder are two reliable varieties. Do not sow the seeds too deeply, or they may rot, and cover them, if practicable, with old Chrysanthemum soil. Watch carefully for mice, as they are very destructive to Peas; if they prove troublesome, traps must be set, baited with pieces of roasted cheese.

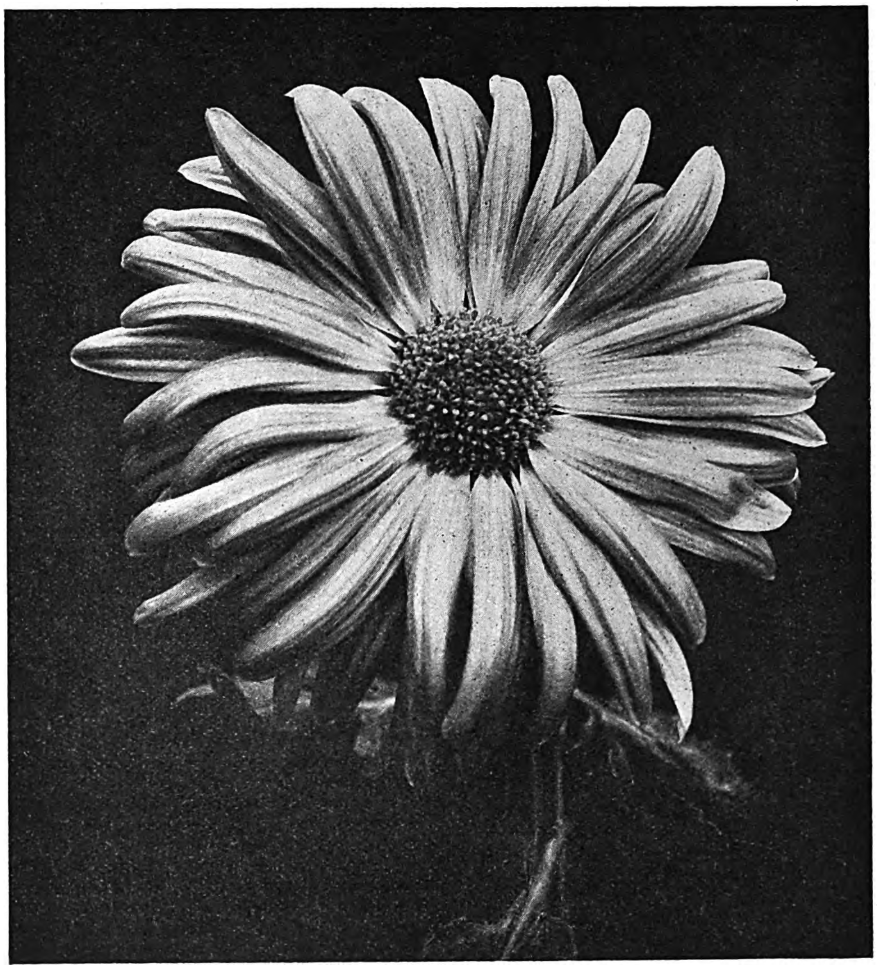

FIG. 30.—CHRYSANTHEMUM NEW YEAR.

R.H.S. Award of Merit, January 15. Flowers golden-amber. Shown by Mr. H. Shoesmith, Junr.

(see p. 53.)

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

Early Potatos.—If heated frames are available, Potatos to produce an early supply of tubers, may be grown in pots or planted out in the frames. Pots are very handy as they may be shifted from one place to another. A good reliable variety should be grown, such as Brydon's Crompton, Victory, Duke of York or Sharpe's Express. These produce a dwarf haulm and consequently require less space than many other varieties.

Jerusalem Artichokes.—If the Jerusalem Artichoke tubers have not been lifted, this work should be done forthwith. Select the tubers required for planting this year, and place the remainder in ashes or sand, for use as required. The ground in which they have been grown should be heavily dressed with manure and dug previous to planting another crop on it, while it will require frequent hoeing during the summer, as it is practically impossible to clear all the Artichoke tubers out of the soil and they are liable to prove troublesome when they commence growth.

Asparagus.—Asparagus beds that have not been so treated should be mulched with manure at once. If manure is not available, two-year-old leaf-mould, applied now, should be suitable for protecting the crowns. In the first week of March, apply a dressing of agricultural salt. Sea-weed is probably the best dressing material for Asparagus, but it is not easy to procure.

Cauliflowers.—Cauliflower plants that are being wintered in frames should be afforded plenty of air on bright days. Any decayed leaves should be removed, while the surface of the soil should be stirred frequently. Slugs often prove troublesome to Cauliflowers under these conditions, but occasional dustings of soot should effectively check their activities.

Runner Beans.—If Runner Beans are to be grown, trenches should be taken out two feet wide and the same in depth, and plenty of leaves and any rough material placed in the bottom. This should be covered with a good dressing of cow manure or well-decayed horse manure, after which the soil may be replaced, leaving the surface as rough as possible. It is advisable to place a stake at each end of the trench, in the centre, as a guide to its position when the time for planting arrives.

FLOWER GARDEN.

EARLY-FLOWERING CHRYSANTHEMUMS.

At a season of the year when lovers of the ever popular early-flowering Chrysanthemum are placing their orders with nurserymen, perhaps a slight review of the leading varieties will not be out of place. In large private establishments where the stately Japanese and graceful Singles are a feature as pot plants, the early-flowering varieties seem to be neglected, usually because employers tire of seeing Chrysanthemums from September until Christmas.

But in limited establishments and among the small exhibitors, they always occupy the best place in the garden.

White varieties are always in demand, the best for disbudding purposes being Kathleen Wells, Framfield White, Débutante and September White; the latter is a great favourite in this district. Mayford White and Lichfield White are best when grown in natural sprays.

There seems to be a shortage of really good yellow sorts for disbudding. September Yellow occupies pride of place for size, being a canary-coloured sport from September White, while the newer Madeline promises well. Gold Dame and Golden Ritchie are well worthy of inclusion in a collection. Goldfinder is best in sprays, as disbudding does not increase the size of the blooms to any great extent.

Of the pale pink sorts, Pink Delight and Uxbridge Pink are the best, with Normandie and Jessie McAlpine, equally good as spray varieties. Deep pink varieties are numerous, Silver Queen being easily the best—in my opinion, it is the finest early Chrysanthemum ever introduced; Shirley Pride, Shirley Rose and Berengaria are all good when disbudded. There is still a need for a good red variety. Of those in cultivation, Crimson Circle, Brightness and Mrs. Wm. Sydenham are the three best, with Red Almirante, a beautiful variety for spray purposes.

Chestnut shades are numerous, with Hotspur the favourite; this grand variety should be grown by everyone. Armorel is good and Almirante is a useful spray sort. September Glory is a magnificent variety for disbudding, being a rich amber-bronze in colour, while Harvester is a good bronze-flowered sort for spray purposes. Dick Barnes, of a purple-maroon or burgundy shade, responds well to disbudding, while Minstrel is an attractive maroon-coloured sort for spray work.

Were I requested to select a dozen early-flowering Chrysanthemums for disbudding, my choice would be September White and Kathleen Wells, white; September Yellow and Gold Dame, yellow; Silver Queen, deep pink; Pink Delight, pale pink; Crimson Circle and Hotspur, chestnut; September Glory, bronze; Dick Barnes, maroon; Cranford Cream, and Salmon Queen, the last named being of a peculiar shade of salmon-bronze.

To obtain good disbudded flowers in September, varieties catalogued as September-flowering usually do best if allowed to break naturally and produce from four to six flowers per plant. October-flowering varieties may be had in bloom earlier if stopped once early in May and three or four blooms are allowed to develop on each plant. *A. J. Turner.*

CYNOGLOSSUM AMABILE.

Several years have elapsed since this beautiful Hound's-tongue was introduced to cultivation in this country, yet it does not seem to have found favour in gardens, probably, in the first place, because it is biennial, although it sometimes lasts for a third year, and secondly, because it may hardly be regarded as hardy. In the warmer parts of the country the young plants probably pass through the winter safely, but in the colder parts, or so has been my experience, a large proportion of them are destroyed, so much so that I have adopted the practice of sowing the seeds in early autumn—one plant alone will produce enough for ordinary garden purposes, and they retain their vitality for at least two years—and planting the seedlings out when of good size the following spring, to produce a display in the latter half of summer. It is surprising that self-sown seedlings seem to survive the winter much better than those raised specially, and these often appear in the most unlikely places and develop into large, floriferous specimens.

The method I practice is to sow the seeds during early autumn, in five-inch pots or shallow boxes of open soil, in a warm house. So soon as the seedlings show the first rough leaves, they are pricked out into large sixty-sized pots, in which they are well established prior to being hardened off and wintered in a cold frame. They are planted out at the end of April or early in May, fairly closely together, in beds of well-prepared soil, in which they establish themselves quickly.

Cynoglossum amabile has rather narrow, ovate leaves, silvery-green and downy, tapering to slender stems. From among these rises the branched flower-stem, from two feet to, in some cases, three feet high, bearing numerous intense pale-blue, Forget-me-not-like flowers, very bright and, when seen in groups, very charming and effective.

There is a white form, also a pink, both of which appear sometimes among seedlings from the type, which seems to suggest that these colour variations are natural to it in the wild state, but they are not so attractive nor so effective as the blue-flowered type for garden adornment. *Kent.*

TREES AND SHRUBS.

SALIX LANATA.

A native of high altitudes over a wide part of Europe and Asia, including northern Scotland, this little Willow makes a stout-branched, sturdy shrub usually under three feet in height. It is a deciduous species, and the oval or obovate leaves, which are over two inches long and about half as wide, are so covered by a coating of dense grey hairs that the foliage has a silvery appearance, especially in spring. The bright yellow catkins, which are about two inches long and half-an-inch across, are decidedly attractive in conjunction with the woolly foliage, both being at their best in May.

S. lanata is a useful little bush for associating with other dwarf subjects near a small pool or stream, and one that will always strike a distinctive note so long as it is not overgrown by taller subjects. A few years ago, some cuttings of S. lanata var. Stewartii were given to me, these coming from the original stock which was, I believe, held by some of the members of Farrer's old nursery company. The cuttings rooted successfully in the open ground, but I have not yet been able to determine what the difference is between this variety and the type. Curiously enough, since I inserted the above and left them to their own devices, raising every one, I have been told that this variety is very difficult to strike! *J.*

PARROTIA PERSICA.

Of all the shrubs which provide a spectacular display in the autumn months, few can equal Parrotia, either in brilliance or the duration of its scarlet and gold colouring. There are shrubs whose leaves may change to pure yellow, and others entirely red, but examples of the two colours effectively combined are uncommon—some of the Pyrus, perhaps, and Cercidiphyllum japonicum, come to mind.

In cultivation, P. persica forms a large shrub of perhaps twenty feet in height; the branches spread upwards and outwards from the base, and owing to this habit it is possibly best grown as an isolated specimen, with a dark background of trees to display the autumn colouring. The bark is smooth, and the wood extremely hard and durable. Like other genus of the Hamamelidaceae, to which Order it belongs, the flowers appear on the bare twigs, usually in February. The buds are covered by brown, woolly scales, which open to disclose a bunch of red stamens, hanging on slender filaments; these form the most decorative parts of the flowers. The leaves are from three to four inches long, nearly oval, while the upper half is toothed or waved; the bright colours are assumed during the latter half of September and, given dry weather, the leaves will remain a glowing picture for nearly a month.

This shrub is, of course, a native of Persia, as the specific name denotes; the generic name was given in honour of a German traveller and botanist, named Professor Parrot.

In the *Bot. Mag.*, t. 5,744 (1868) it is described as one of the rarest trees in cultivation at that time, although it had been introduced nearly thirty years previously. Propagation may be carried out by means of layers. *B. O. M.*

ALPINE GARDEN.

THE HOUSTONIAS.

Universally admitted to be among the choicest of our rock plants are the Houstonias, called in their native land, America, Bluets or Innocence. The number known to botanists is considerably greater than that of those in commerce, and a short note on the latter will be of more value than a lengthened dissertation upon the genus as a whole.

These plants are all very dwarf, rarely exceeding three or four inches, and are of inestimable charm. They form close-growing carpets of small, charming, green leaves, smothered, usually from May onwards, by hosts of small, four-petalled, blue, purple or white flowers. This floriferousness is frequently too severe a strain upon the constitution of the plant, which, in many places, succumbs after flowering. Yet, if some consideration is given to the requirements of these Houstonias, they may live for many years. With me, they appear to require a certain amount of shade, but this should not be too deep. They like a very light and sandy soil, but, on the other hand, this should not be too dry during the growing and flowering season.

The late Mr. Reginald Farrer advised water beneath, but in many gardens this cannot be supplied. The alternative is frequent waterings with clear water during dry weather. This the writer has practised with great advantage. Another point which has been beneficial has been the occasional removal of all the flowers, an unwelcome task, but the future welfare of the plant justifies such sacrifice.

The Houstonias in commerce, as already stated, are not numerous. The favourite among them is Houstonia coerulea, about three inches high, with lovely little pale blue flowers. It is a real gem among alpine flowers. The white variety, alba, is not at all common in gardens, and is highly prized by most folks, although I consider the typical blue form the more delightful. H. serpyllifolia is rather larger in its parts and more spreading in habit, with the flowers deeply tinted with violet. It is alleged to be the hardiest of the race, but with similar care H. coerulea is quite as hardy. So far as I know, these are the only Houstonias at present in commerce in this country.

Planting may be effected in spring. Farrer stated the finest plants he ever saw were in a wet and heavy, calcareous loam; but calcareous soils are not necessary, and a lighter soil is, I feel confident, better for the Houstonias than a heavy one. *S. Arnott.*

BELLIUM MINUTUM.

This charming, minute little Daisy—the Little Mary—is never so happy as when growing in the crevices of stone paths and steps, for despite its lowly stature of about one inch, it spreads freely, forming mats of closely packed, tiny leaves, and covering them, from May onwards until early July, with miniature, white, Daisy flowers, flushed with purplish-pink on the reverse side.

The whole plant is unassuming in nature, but it is nevertheless an attractive little subject, and useful for furnishing such positions as stated above. It is a native of Greece, absolutely hardy, and easy to establish, asking for no especial soil conditions and not objecting to partial shade, although it seems to prefer full sun. *M. W.*

INDOOR PLANTS.

CINERARIAS.

Few annuals grown for the embellishment of the conservatory or cool greenhouse, as well as for decorative purposes, are more attractive and useful than Cinerarias, while the improvements effected by the hybridists in the size and colour of the flowers, together with the comparative ease of their cultivation, will always insure a high position for this popular plant in public favour.

At no period of growth does the Cineraria require a higher temperature than that of an ordinary greenhouse, but its cultivation, although simple, must be thorough if the best results are to be obtained—due regard being given to potting on so soon as necessary, a careful use of the watering-can at all stages of growth, and free ventilation on all occasions when the weather conditions are favourable.

Propagation of the florists' varieties is generally effected by seeds, and most leading houses of seedsmen offer particularly fine strains of both the large-flowered and the stellata forms—the two most commonly grown—at comparatively low prices, and in a variety of colours ranging from white, blue, violet, lilac and pink, to red and crimson. The stellata type produces large, spreading panicles of starry flowers on long stalks, and has the additional advantage, when cut and placed in water with foliage, of lasting a considerable time. There are also double and Cactus-flowered strains, but these are not so well known.

The time of sowing the seeds depends on when it is desired to have the plants in flower. They are usually required for the earliest months of the year, therefore seeds should be sown in May, and again in June to provide a succession—plants from the latter sowing should produce flowers the following March or April. It is quite possible to have Cinerarias in bloom in November and December by sowing in April. Shallow pans will be found suitable receptacles for seed-sowing, and these should have ample drainage and be filled to within one inch of the top with well prepared soil. After watering the soil well with a fine-rosed can, scatter the seeds thinly over the surface, and cover them lightly with fine soil, afterwards placing them in a temperature of 55°. A piece of glass and a sheet of paper placed over the receptacle is beneficial until germination takes place, when the seedlings should be exposed to full light, only shading them from very hot sunshine; admit air freely, but avoid creating cold draughts.

A suitable compost in which to sow the seeds consists of one part good mellow loam to two parts of leaf-mould, with sufficient silver-sand added to keep the whole open. After mixing it well, pass it through a quarter-of-an-inch-mesh sieve. A similar soil, but coarser in character, may also be used for the plants in their seedling stage, with an increase of the loam content. For the final potting, the compost should be one of equal parts fibrous loam and leaf-mould, with silver-sand and a little well decayed manure added. It is not advisable to make up a too rich compost for Cinerarias; rather depend on feeding when the plants have well filled their flowering pots with roots, as planting them in a rich compost encourages weak growth and an over production of foliage.

So soon as the seedlings are large enough to handle they should be pricked off, either into small pots, or—and this is preferable—two to three inches apart in boxes, placing them in a close frame where they may be shaded when necessary, and sprinkling them with soft water each morning and evening when outside conditions permit. When it is seen they are commencing to grow, air should be admitted whenever practicable, for at no stage of their growth should Cinerarias be coddled. As the plants fill the intervening spaces they should be potted; the largest will require pots four inches in diameter, while sixty-sized pots will be found sufficient for the weaklings—these may not require pots above five inches in diameter even for the final shift, but are often found very useful for decorative purposes where a receptacle of larger dimensions is unsuitable. After this potting, return them to the frame, which should be kept close for a few days until the roots have commenced to take possession of the fresh compost, after which admit air freely, even leaving the lights off altogether on fine nights, as the late summer and autumn dews are most beneficial to healthy growth. It is also necessary to shade them from very bright sunshine; for this reason a frame under a north wall is most suitable for them. As Cinerarias are quick-growing and free-rooting subjects, care should be exercised to prevent them becoming pot-bound until in the flowering pots, which should be six or seven inches in diameter, although if it is desired to have large specimens, eight or nine-inch pots would not be too large, but an intermediate move is advised before placing them in these.

After the final potting, return the specimens to the frame, allowing ample room for development between the plants, which should be placed on inverted flower pots on a bed of sifted ashes. Endeavour to have them in their flowering pots so soon as possible, to allow of their being well established before the shorter days arrive. Subsequent treatment consists of a gentle spraying overhead whenever climatic conditions allow; a judicious use of the watering-can, and rigorous attention to airing and shading. On the approach of winter and the advent of sharp frosts, the plants should be "housed"—a heated pit, or light, airy greenhouse, with a maximum temperature of 50°, should prove suitable. Endeavour to maintain a fairly moist atmosphere, admitting an abundance of air on all suitable occasions.

With the first appearance of the flower buds, feeding should commence; weak liquid manure, soot-water and an occasional top-dressing of an approved fertiliser may advantageously be applied, while a suitable "complete" manure consists of ¼-lb. muriate of potash, ½-lb. superphosphate and ¾-lb. nitrate of soda, dissolved in twenty-five gallons of water, and given every ten days. Feeding should cease so soon as the flowers show colour.

There are a host of enemies that attack Cinerarias, but the two most troublesome are aphis and the leaf-mining grub. Free, healthy growth is the best antidote for the former, but should it make its appearance, prompt fumigation with XL All, or a similar fumigant, should eradicate it. The leaf-miner is more difficult to deal with, but fumigation with auto-shreds should prove effective, while it may also be destroyed by pressing the infested leaf between the thumb and finger. *T. Wilson, Moreton Paddox.*

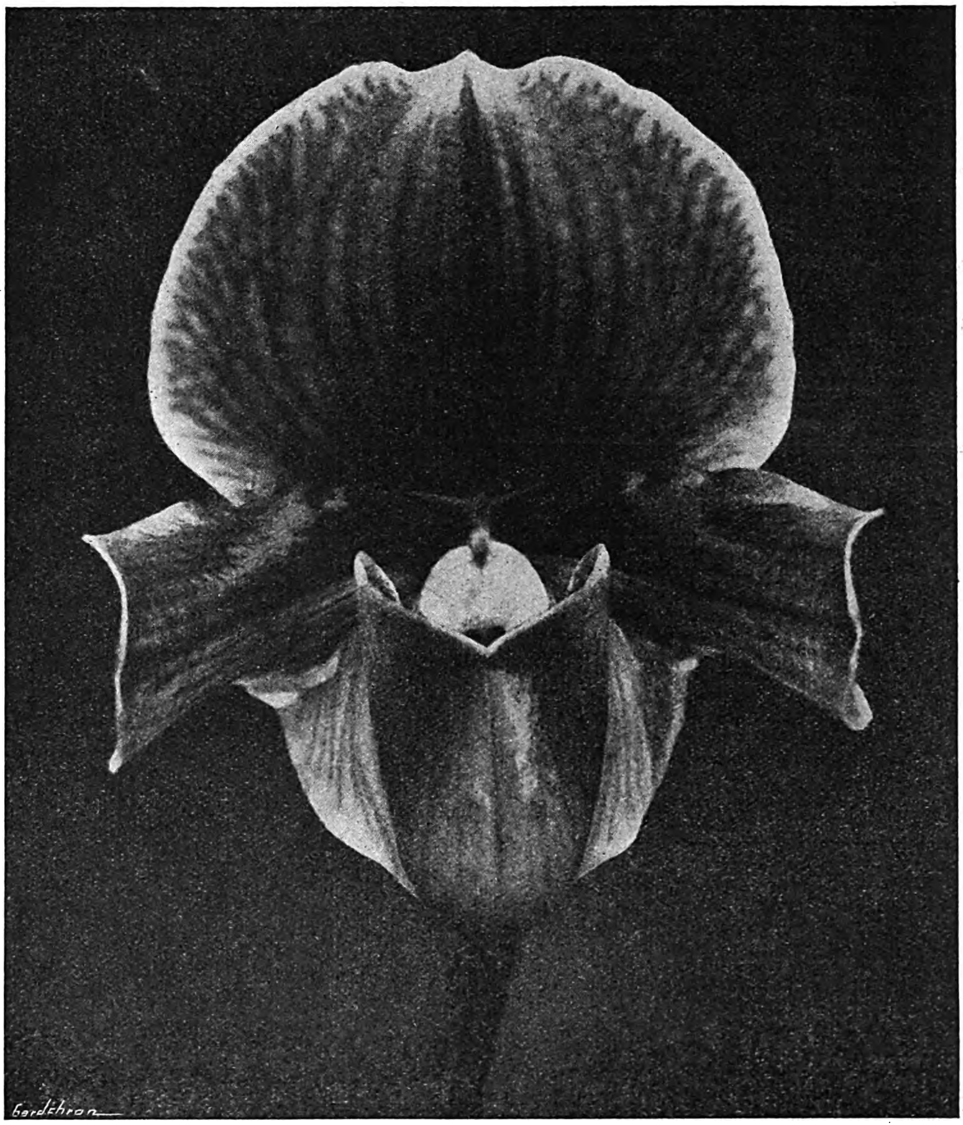

FIG. 31.—CYPRIPEDIUM STROMBOLE.

R.H.S. First Class Certificate, January 15. Flower rose and reddish-purple. Shown by Baron Bruno Schröder (gr. Mr. J. E. Shill), Dell Park, Englefield Green.

(see p. 58.)

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WILLIAM BATESON.

AMONG the chief distinctions in the world of horticulture is the Victoria Medal of Honour, conferred by the Royal Horticultural Society. Although the list of living recipients is so high as sixty-three — the number of years that Queen Victoria reigned —the names of professional scientific men, whether botanists, physiologists or chemists, are not often to be found in it. It was an honour conferred upon William Bateson, and it was an honour which he wore with pride. Yet Bateson was by upbringing and training a zoologist, and in the earlier part of his career his researches were mainly concerned with animals. How then did it come about that his name, as that of one who had rendered distinguished service to horticulture, should have been preferred above those of many eminent botanists by profession? To answer that question rightly would be to state what Bateson stood for in the horticultural world, and to attempt it is to go back some way in the development of scientific thought.

As everybody knows, Linnaeus is the dominating figure in the botanical history of the eighteenth century. It was the century of classification and order, and the great *Systema Naturae* marks its climax. At the root of it all lay the idea of the immutability of species; that living creatures were as they had issued from the mint of the Creator, save, perhaps, for a little tarnish engendered by forced contact with a sinful world. That species would occasionally cross was known, but the common sterility of such products was against their introducing any disorder into the creative scheme. Even when the hybrids might, as in rare cases, prove fertile, the work of Kölreuter seemed to show that they eventually reverted to a parental form.

Horticulture, as understood to-day, was still in its infancy, and relatively little was being effected by gardeners in improving the strains which had been handed on to them. Although some flowers, such as Pinks and Tulips, existed in considerable diversity, there was nothing really comparable to the rapid evolution of the Delphinium, the Sweet Pea, or the Primula in recent times, to arrest a man's attention and to set him thinking how it might have come about. The natural philosophers, too, when they paid attention to these matters were chiefly interested in lauding the beneficence of the Creator as manifested in the beauty of his handiwork, and in its perfect adaptation to its purpose. Indeed, they did little more than ring the changes on the later chapters of the Book of Job. Nothing in the thought of the time was opposed to the conception of the fixity of species until Buffon cautiously hinted at transmutation. With Erasmus Darwin and Lamarck came the idea of gradual evolution, ultimately stated in an acceptable form in Charles Darwin's *Origin of Species*.

Darwin's theory of Natural Selection was, of course, based largely upon the facts which he had so diligently collected from the breeders. By that time the breeding of animals and plants had made considerable progress. New and improved races had been produced from the older material and fixed by selection on the part of the breeder, and their procedure Darwin considered analogous to that taking place under natural conditions. Natural Selection here took the place of the artificial selection practised by the breeder.

In this way, the world was led to a conception of the nature of species entirely different to that which had hitherto prevailed. Living things were all subject to variations which were transmissible through some mysterious process of heredity. By concentrating upon a slight variation and selecting it for some generations, it could be gradually increased and worked up into a tangible fresh character; on the cessation of selection it would tend to revert to the original condition. In other words, the living thing was plastic, and by the selective process could be moulded into this form or into that. A species was no longer a fixed thing for, although ever so slightly, it was something different yesterday and would be something different again to-morrow.

By botanists and zoologists the idea of evolution was eagerly accepted, and they at once set to work to discover how far the facts of plant and animal structure fell into line with the evolutionary idea—in what way the various groups of living things could be related to one another on evolutionary principles. Comparative morphology and embryology became the order of the day, and in every laboratory the clicking of the microtome heralded some fresh view on the ancestry of this or that group. Intense as was the activity of the laboratory, it was remote from the study of the living thing, whose very existence seemed to be for little else than to serve as material for pickling and dissection. So there formed a deep gulf between the professional biologist and the growers of plants and animals, for neither understood nor sympathised with the problems of the other.

It was here that Bateson came upon the scene. Although himself, in earlier days, a brilliant exponent of the methods current in the laboratory, he quickly came to mistrust the utility of such work. After all, the great problem before the naturalist was the understanding of the nature of species, what they are, and how they have come about. Of what use was it to elaborate hypotheses as to how one great group of the animal or plant kingdoms might be related to another when we could conceive no satisfying idea as to the way in which a given species might pass into a closely related one?

Bateson suggested that the best way of attacking the problem was to note carefully what sort of variations actually did occur in living things, but his scientific brethren paid little heed to him. So he started off by himself to collect all such facts as seemed to him to bear upon the matter, digging into the literature, searching museums at home and abroad, and above all things turning again, like Darwin before him, to the breeders of animals and plants. As the outcome appeared his great work *Materials for the Study of Variation*, wherein he definitely stated what is known as the principle of Discontinuity in Variation. A given variety may exist beside another without the existence of intermediate forms. Such, for example, is the dwarf Cupid Sweet Pea as compared with

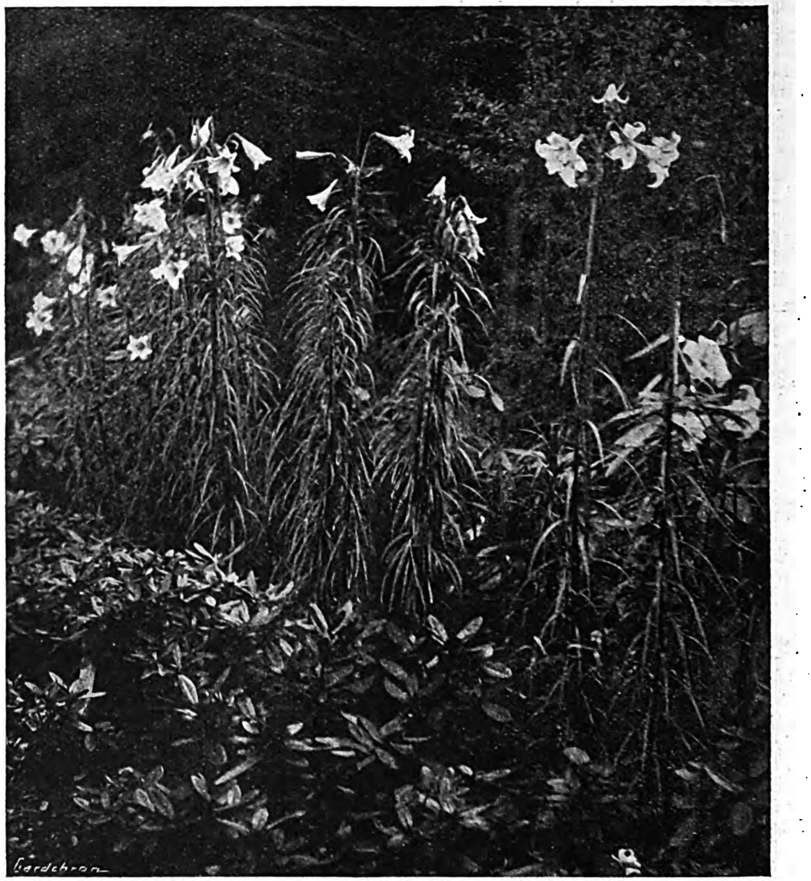

FIG. 32.—LILIUM PHILIPPINENSE VAR. FORMOSANUM AT CASTLE KENNEDY.

the normal form. There are no intermediates known, yet nothing is more certain than that the dwarf was derived from the tall in spite of the absence of intermediates bridging over the discontinuity in height. *Natura non facit saltum* proclaimed the orthodox, whereas Bateson held that the reverse must often be the case. His views, naturally enough, led him into controversies, of which one of the earliest resulted in his demonstration that the varied forms of cultivated Cinerarias owed their origin to hybridisation rather than to gradual evolution through constant selection from a wild form.

It was work such as this that brought him into that close contact with the growers that lasted throughout his life and turned his thoughts in the direction of experimental crossing. For he saw clearly that the next stage must be to cross discontinuous varieties together and follow out carefully what took place in succeeding generations. Experiments of this nature were already well under way when the dramatic re-discovery of Mendel's paper placed all these matters in a fresh light. Through his previous work, Bateson's mind had been so attuned that he instantly realised its great significance, and thenceforward, Mendel's principle of segregation became the guiding thread of his own experimental work, as well as of many another worker directly inspired by him. For many discoveries, such as the explanation of reversion on crossing, and of linkage of characters in heredity, the horticultural world is directly indebted to Bateson. Directly also, is it indebted for an exposition of the nature of living things as revealed by the phenomena of heredity that in its way is unsurpassed. There is a tendency in these days of chromosomes and genes to regard *Mendel's Principles of Heredity* as out of date, yet there is no general work that can be read with greater profit by the student of heredity to-day, for there is none that demonstrates so clearly the logical method of attacking a problem, or is so clearly illuminated by critical insight. And now that the Cambridge University Press has issued a collected edition of his papers, the horticultural world is in a position to estimate the value of the legacy he left it. On some aspects of Bateson's contributions we hope to touch in subsequent issues of *The Gardeners' Chronicle*. But important as these are, there is one service rendered by him which, perhaps, is even greater. For by his teaching and by his example he broke down the barrier which had grown up between men of science and men of practice, between those who make knowledge and those who use it. He made both sides realise that their special problems had much in common, that the one could help the other, and by so doing pave the way to that increased control over natural forces without which civilisation must inevitably stagnate into death.

LILIUM PHILIPPINENSE VAR. FORMOSANUM.

THIS beautiful Lily has been a success at Castle Kennedy, Wigtownshire, especially where planted among Rhododendrons (Fig. 32). It is also a good subject for massing in a shrubbery border (Fig. 33) as it blooms late in the season. Until recently it was thought that Lilium philippinense var. formosanum could not be grown out-of-doors, but I believe it to be far hardier than most people think. The photographs sent herewith were taken on November 21, 1928, after a very cold night, when we experienced 5° of frost, and I had almost despaired of securing the photographs I so much desired. However, the plants and flowers came through the ordeal successfully and were apparently undamaged. I feel sure that winds and rains do more damage than the cold. Some of the flower stems reached a height of six feet; one (Fig. 34) carried a head of eight and another one of ten flowers.

L. philippinense var. formosanum may be flowered in two years from seed-sowing, but owing to the fact that it flowers so late in the season, it is almost impossible to secure seeds from outdoor plants. However, it gives off numerous small bulblets, and these may be easily nursed along into flowering size.

This fine Lily is a native of the island of Formosa, where I believe it is the only native species. It is stated to be common from the sea-level up to 10,000 feet elevation. Wilson, in his *Lilies of Eastern Asia*, writes of finding it over six feet tall, and he also states that plants may be found in flower in nearly every month of the year at the lower altitudes. *R. W. Rye, The Gardens, Castle Kennedy.*

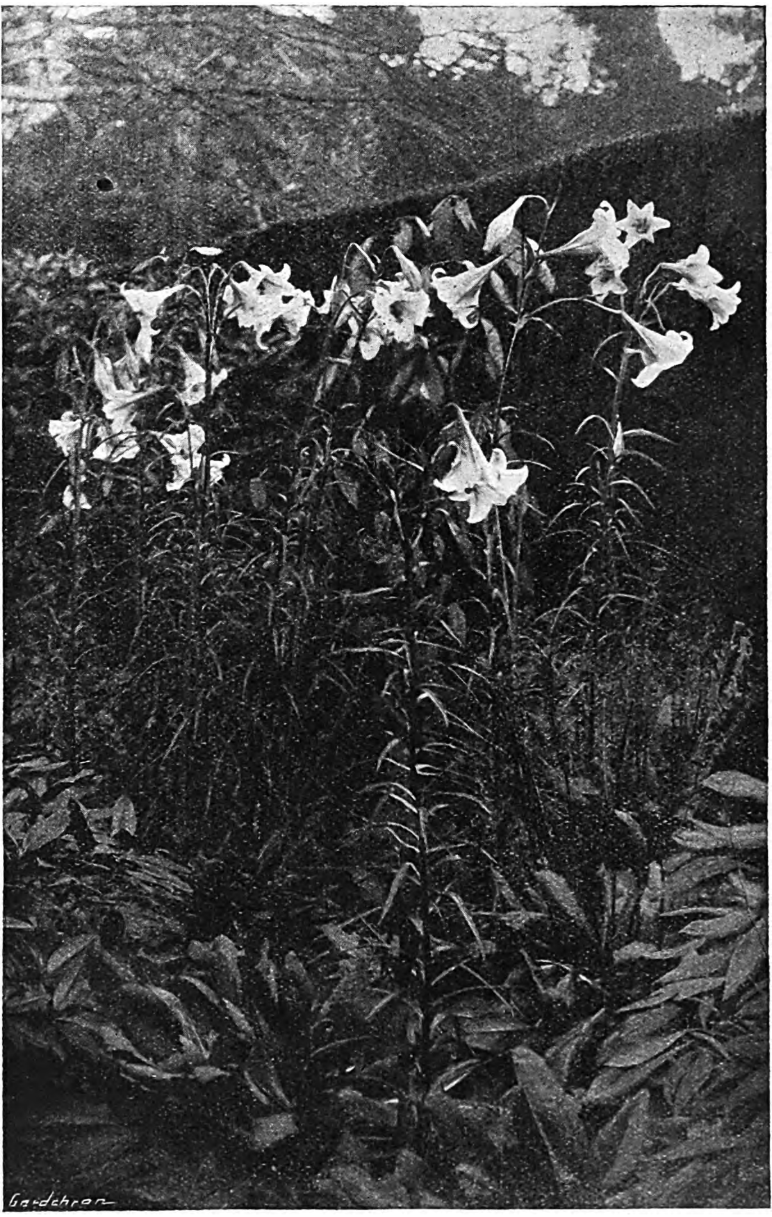

FIG. 33.—LILIUM PHILIPPINENSE VAR. FORMOSANUM IN A SHRUBBERY BORDER AT CASTLE KENNEDY.

NOTICE OF BOOK.

American Fruit-growing.

ANY person who wishes to gain some knowledge of the methods of commercial fruit-growing followed in the United States, can do so very quickly by reading this book.* The author, who is a well-known authority on fruit-growing in America, wastes no words and gives a great deal of information in a small space. Although, in the editor's preface, the book is described as being intended for "wide-awake and ambitious fruit-growers," we judge from its simple style that the author really intended it for "the boys and girls of America, the fruit-growers of the future," to whom he dedicates the volume. In other words, it is a book for the beginner and the student, rather than for the experienced grower.

The pruning of Apples and Pears in America consists almost entirely of thinning out. No mention is made of spurring. The trees are headed down when planted, and apparently make very free growth in their early years. Once the required number of "scaffold" branches has been obtained to lay the foundation of the head, there is no further shortening of shoots, except such as is required to prevent crowding. Pruning is concerned mainly with the removal of small branches where they are too close together or crossing. Laterals are evidently allowed to form fruit spurs naturally, and are not shortened until they grow long enough to interfere with other growths. This is no doubt a quick method of bringing trees into bearing, and is probably necessary with trees on free stocks, as they nearly always are in America, and in a climate where growth is rampant. In thinning-out, the grower is advised to do the work, so far as possible, by means of numerous small cuts in all parts of the tree, rather than by sawing off a few larger branches. The invigorating effect of the pruning is thus well distributed, and the production of water-sprouts is reduced. Although so much is said about thinning-out in American books on fruit-growing, the illustrations always appear to English eyes to show trees which are very full of growths, but this may be merely the effect of the necessary reduction in size when such large trees are photographed.

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* *Fruit-growing Projects*, by Fred C. Sears, Professor of Pomology, Massachusetts Agricultural College; pp. 383, illustrated. London: Macmillan and Co. Price 7s. 6d.

With regard to soil cultivation in orchards, three methods are recognised:—Clean cultivation, sod culture, and the cultivated strip system. Clean cultivation is seldom quite what we understand by the term here. The work starts with ploughing in early spring, and the land is kept clean and loose on the surface by frequent cultivation until the early part of July, when a cover crop of some kind is sown, or in some cases the land allowed to sow itself with grass and weeds. This cover crop remains during the autumn and winter, and is ploughed under in early spring. There are several reasons for this system, which seems to be well designed to suit the conditions prevailing. A cover crop is necessary in winter to prevent the washing away of soil by heavy rains, a need which is seldom felt in this country. It serves also to supply the soil with humus, and with nitrogen if a Leguminous crop is used, and also to check growth during the autumn with benefit to the fruitfulness of the trees. Active growth is most desired during spring and early summer, when it is assisted by cultivation. English growers might do worse than give this system a trial.

Sod culture, as practised in America does not mean grazing with stock. The grass is mown twice a year and spread as a mulch under the trees, where it eventually rots into the soil. This system obtains mainly in districts with heavy rainfall, and, when used in conjunction with the generous use of nitrogenous fertilisers, gives good results. The cultivated strip method is a compromise between the two plans just described. The strips on which the rows of trees actually stand are left in grass, and mown twice yearly as in sod culture. The alleys between the rows are cultivated during early summer, and then sown with a cover crop, as in the clean cultivation method. This saves the labour of hand cultivation close to the trees and seems to be a very sensible and economical system.

Spraying is considered by the author to be the most important single operation in the care of an orchard. Pruning, manuring, and cultivation, although important, are not so disastrous if omitted as is neglect of spraying. When one reads of the formidable list of pests and diseases with which American growers have to contend, one does not doubt this statement.

Strawberries are grown for market in America on the matted row system, which is generally condemned in this country; but then the beds are commonly cropped for one year only. The plants are set eighteen inches apart in the rows, and during their first season, when blooms are removed, the runners are allowed to root as they will; or, in what is called the "spaced row" system, they are arranged regularly about the parent plants. The following year, both the old and young plants bear heavily, after which the bed is usually abandoned. The method of littering the beds is interesting. Owing to the severity of the winters, a thick mulch of straw has to be applied in late autumn, covering the entire space, plants and all. In early spring, when the plants begin to grow, but before the growths become blanched, the mulch is opened slightly along the rows, but only just enough to allow the plants to push through. If the mulch is thick enough, weeds are suppressed, moisture is conserved, and cultivation spared, while the fruits, of course, are kept clean.

Other crops dealt with in this extremely well illustrated book are Peaches, Grapes (in the open), Raspberries, Blackberries and Loganberries. *M. G.*

NOTES FROM A WELSH GARDEN.

THE very vivid green of the glossy-leaved Sedum praealtum is always pleasant enough these dull days, especially on a dry wall where this rather tender species is safer. I once had several Sedums of this class, but they have all gone but this one, which seems fairly hardy in a sheltered place. It flowers tolerably well in spring, provided the season be sunny, but at its best it makes rather a feeble display compared with those blazing hedgerows of gold which make such a glorious show of colour in many gardens of southern Europe, even at this season. Still more beautiful as a foliage plant is S. Palmeri, the leaves of which are a cool, glaucous green that assumes a frosty sheen in winter. Then none can overlook that hardy stand-by, S. spathulifolium, one of the best of all Sedums for our gardens. In all its forms this American species is now delightful, whether the leaves and rosettes are large or small, blue-grey or rose-purple, or a bright blood-red. The crimson-flushed rosettes of S. compressum can also be attractive at this season, but last winter's frosts were too much for this fine species here.

Anemone Hepatica, both the rose and white forms, were flowering gaily before the New Year. But if a spell of wintry weather has temporarily checked their ardour, these cheerful things will be as pretty as ever so soon as milder conditions prevail. While one can welcome these Anemones as seasonable associates for the early Snowdrops, I am never so sure about the Primroses. These, in blue, purple, yellow and other tints flower so persistently from late November onwards that, while they seem to rob the spring of some of its rightful charm, they seldom look really happy as winter flowers.

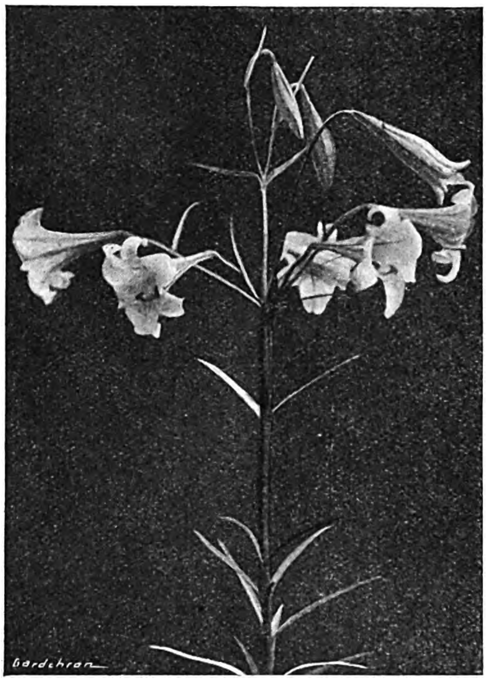

FIG. 34.—A SINGLE SPIKE OF LILIUM PHILIPPINENSE VAR. FORMOSANUM.
(see p. 63)

Vinca difformis, on the other hand, even if it is a southerner, fits into the tone of the hour with singular success. Its sharply-lobed, white flowers gleam with a cold, dead pallor in the shady places in which it delights, and if they are snubbed by frost, there are always plenty more to follow. I have not found this plant anything like so rampant as V. major or V. minor, and one wonders why it is not more often grown as a carpeter beneath trees, especially by those who take an interest in their winter gardens. Also delightful in the woodland undergrowth just now is the foliage of the hardy Cyclamens, their soft olive-greens often so attractively lined and clouded with emerald and silver. Then there are the crimson-tinted Shortias, the even more ornamental leafage of Galax aphylla, the deep green, bronze-tinted thatch of Lomaria alpina's close, over-lapping fronds, the rich, russet-tinted verdure of Gaultherias, and the vivid lettuce-green with which Helxine Solierolii covers a cool rock. These and a hundred others in a setting of brown leaves and rusty Ferns, do much to cheer the woodland gardener through the darkest days.

If those precocious Primroses are apt to "queer the pitch" for later on, even more flagrant is the behaviour of Ribes speciosum. This very handsome Gooseberry is often wont to believe that a mild November is the advent of spring, and to show it by immediately disclosing the tender green of breaking buds. But this time it has gone further and a large bush, quite in the open, is now entirely garbed in the fresh and tender leafage of April. Several degrees of frost have not injured its foliage, and this hearty Californian optimist, which is playing at being an evergreen, will, I have no doubt, bloom as freely as it always does at its appointed time.

In contrast to the autumn-fruiting Barberries, whose berries, which have been a virulent colour since the first frost, will linger on the leafless branches, is B. pruinosa. This very distinct and elegant shrub is not only an evergreen whose leaves are a lively, lustrous green with almost white underparts, but its fruits are now very attractive. These berries, which hang singly or in clusters on long stalks from the leaf axils, are not large, and they are black, but they are coated with a blue-white "bloom" which has that almost luminous quality common to some Grapes.

Erica arborea came into flower much earlier than usual, but this fine winter-flowering Heath does not bloom with such riotous prolificacy here, nor make such a shapely bush, as it does in gardens where there is a fuller exposure to light and air. It is inclined to get thin and straggly in the neighbourhood of trees and, being softer in leaf and branch, is actually more susceptible to frost than it is in places which have little or no shelter. At Bodnant there is a magnificent specimen which must be thirty to forty feet in circumference. It is standing on the open lawn, and does not appear to have suffered any injury from the disastrous frost of 1927-8. Yet there are shrubs of this species in the same district which, despite their more protected situations, were cut to the ground. Parallel instances showing the effect of environment upon the hardiness of shrubs are afforded by Veronica Hulkeana and Metrosideros robusta; These were destroyed last winter in my comparatively sheltered garden, yet neighbours who have them both growing quite in the open, and fully exposed to frost and cutting winds, did not lose a twig of either. Such plants doubtless enjoy the advantage of being drier should frost follow wet, but it is, I think, fairly evident that the explanation of their immunity may be found in the fact that they are harder in foliage and wood—more acclimatised—than those in what would appear to be kindlier surroundings.

Chimonanthus fragrans, which should now be delightfully sweet, both in the garden and indoors, was also among last year's casualties, hungry mice which barked the stem being the cause of its loss. But Eleagnus macrophylla can be very nearly as fragrant under certain conditions of atmosphere and this choice evergreen has, in addition, foliage of singular beauty. E. macrophylla is, however, not quite so hardy as one would like it to be. It is apt to lose a good many of its brilliantly silvered leaves here during severe frosts, and it does not produce those ornamental fruits one reads about. If it is my very light loam which is the cause of this failure, as some contend, and not the climate, the former appears to be conducive to the production of a generous and bright silveriness in the foliage.

The fact that Daphne Dauphinii (hybrida) which I noted as being in flower in November, is still (mid-January) carrying a prolific crop of blossom is worthy of mention. Had the winter been mild, this would not have been surprising, but we have had prolonged spells of frost (up to 10°), and a good deal of sloppy snow, and more frost on that. Yet this cheerful little winter-flowering evergreen is undaunted, its purple clusters being unblemished and deliciously fragrant. *A. T. Johnson, Ro Wen, N. Wales.*

THE YELLOW DAY LILIES IN AMERICA.*

(*Continued from p. 51*).

SPECIES AND VARIETIES.

THE species now available in the American trade are relatively few as compared with the named hybrids. They are all excellent plants and worthy of garden use, with the possible exception of the Tawny Day Lily. In the following text, the species will be described first, divided into the two groups, early and late flowering, and the hybrids will be likewise listed and similarly divided. Several of the hybrids have names that might suggest a specific character, as, for example, ochroleuca, Baronii, and luteola, but the crosses are recorded, so there can be no question.

EARLY-FLOWERING SPECIES.

There are four species that flower almost simultaneously, but with approximately the following order: H. Middendorffii, H. minor, H. flava, and H. Dumortieri. The season causes some variation, principally showing as an exchange in places of H. flava and H. Dumortieri.

The Amur Day Lily, Hemerocallis Middendorffii, Trauty and Mey., makes dense tufts of yellowish-green foliage about fourteen inches high, through which are borne the flowering stalks barely overtopping the leaves, The inflorescence is a crowded head surrounded by conspicuous bracts. The flowers are six to ten in number, opening successively. The colour is cadmium-yellow of a pure and luminous quality, contrasting well with such purple Tulips as Velvet King and the white of Aquilegias, particularly the double white A. vulgaris, and is almost identical in colour with the golden Wallflower (Cheiranthus Allionii). The almost scentless flowers are more cupped and less trumpet-shaped than those of most Day Lilies. The foliage is deciduous and in dry situations dies off rather early in the season. Seeds are produced abundantly, but propagation by division is more rapid. This plant is sold at times as H. Dr. Regel.

The Dwarf Day Lily and the Early Day Lily (Hemerocallis minor, Mill., and Hemerocallis Dumortieri, Morren) may be considered together, as aside from certain technical differences the first might be regarded as a diminutive form of the latter. The plants form low, dense clumps of about the same stature as H. Middendorffii, but produce inflorescences that are more spreading or overarching, and are branched and not capitate. The flowers are Lily-like in shape, deep chrome to cadmium-yellow, with brownish stains on the backs of the three outer segments. As all the segments are relatively narrow, the flowers are more starry in appearance than those of H. Middendorffii. These species seed rather sparingly but are easily propagated by division. The foliage is deciduous. H. Dumortieri is occasionally listed as H. rutilans or as H. Sieboldii.

The Lemon Day Lily, Hemerocallis flava, was named by Linnaeus in the second edition of the *Species Plantarum*, in 1762. In the first edition, published in 1753, he used the name Hemerocallis lilioasphodelus, which technically is the proper Latin name for this species. It is the familiar Lemon Lily of old gardens. Unlike the preceding odourless species, it is very sweetly scented. It forms loose clumps of dark green, arching foliage and spreads rather widely by underground stolons. The flower stalks rise about three feet in height, taller or shorter, according to the richness and moisture in the soil, and branch rather widely at the summit. The flowers are of exquisite Lily-like shape and are a clear lemon-chrome colour. The plant seeds somewhat sparingly, producing very large, almost globular capsules which contain a few rather large seeds. Increase by the removal of stolons is to be preferred. This species flowers more freely and is more content in moist soil than the preceding species, and is particularly lovely when planted near pale-lavender Irises.

There is a stronger-growing form known as flava major, which is even more desirable than the type because of its large growth and longer flowering season.

LATE-FLOWERING SPECIES.

The summer-flowering species now available, in their approximate order of flowering, are H. fulva, H. aurantiaca, H. Thunbergii and H. citrina. In beauty they are somewhat overshadowed by their hybrids.

The Tawny Day Lily, Hemerocallis fulva, L., is the Day Lily most widely distributed over the world. It forms dense clumps of strong-growing foliage and spreads by wide underground stolons too aggressively for general garden use. Its branching stalks rise as high as four feet, and produce flowers successively through July The colour varies somewhat, but is a tawny-red over the yellow of the petals and becomes most intense at the arrow-shaped zone which defines the yellow base of each segment. There is considerable difference in the pigmentation of H. fulva, with a predominance of paler forms. This plant is practically sterile and is propagated by division. The foliage is almost evergreen.

There is a double form usually listed either as H. disticha or H. Kwanso which is identical in all ways, save that it is later-flowering, blossoming well into August and flowering beautifully with white Phloxes and various Buddleias; there is also a form with variegated foliage. Various plants are to be obtained in the trade under the name of Orange Day Lily, Hemerocallis aurantiaca, Baker, all of which rather closely approximate the description of the species. The true species is very similar to H. fulva in its general habit, but is neither stoloniferous nor sterile. The bright orange flowers are large, opening so widely as to appear somewhat starry. It flowers during July and continues into August. As there are many flowers on the branched inflorescences, it makes a splendid display when the clump is well established and of some size.

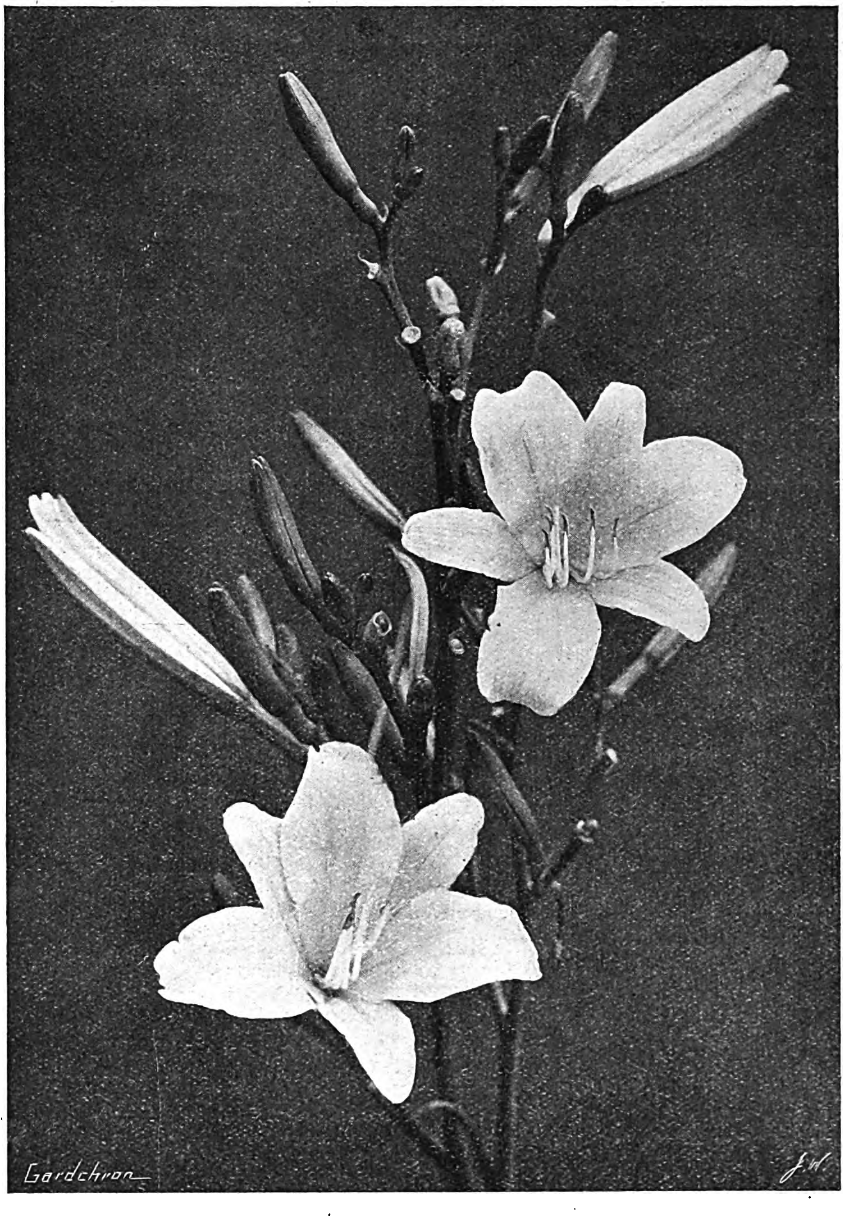

FIG. 35.—HEMEROCALLIS LADY FERMOY HESKETH.
(see p. 51.)

The plant most commonly received in place of H. aurantiaca is H. aurantiaca major, a dwarfer plant with flowers more similar in shape and pattern to those of H. fulva, but of a paler and more agreeable hue, as they possess none of the purplish quality that mars the rusty-red of H. fulva. Until this is well established, so that many flower stalks are produced in one clump, it is not especially showy in the garden, as its colour does not carry so brilliantly as the lighter yellows, but shows as an apricot-yellow. It is less tall, rarely exceeding two feet. As it makes considerable growth of evergreen foliage in the fall, it should be planted in a well-drained soil and given the protection of rather loose straw or litter. If it is left unprotected the leaves are so badly injured that the plant suffers in vitality. Like the type, this form is neither stoloniferous nor sterile.

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* By B. Y. Morrison, Senior Horticulturist, U.S. Bureau of Plant Industry. Reprinted, in substance, from Circular No. 42, U.S. Department of Agriculture, Washington, U.S.A.

The Japanese Day Lily, Hemerocallis Thunbergii, Baker, is commonly described as "similar to H. flava, but later-flowering." Superficially, this is true, but even if they flowered together this plant would be differentiated by its more slender leaves and taller, more slender flower stalks, which are widely branched and bear flowers much paler and of a more greenish-yellow than those of H. flava. The flowers are sweetly scented, and during hot weather often open in the evening and last until the following evening, a tendency apparent in many of the summer-flowering varieties. The plant does not spread by stolons, but must be increased by division.

The Citron Day Lily, Hemerocallis citrina, Baroni, is a true evening blossomer, opening its flowers about 6 o'clock and closing them before noon the next day. In general habit it is much like H. Thunbergii, but the inflorescence is less branched. The flowers are larger, longer, and more trumpet-shaped. They are slightly deeper in hue, and are even more delightfully scented. The foliage is semi-evergreen. The plant is reported to be half-hardy, but has endured without protection in the writer's garden (near Washington, D.C.). It is not showy in the border until it has become a fair-sized clump.

None of the late-flowering species should be judged from the flowering of newly-planted roots. As their increase is less rapid than the early-flowering species, it is the usual nursery practice to divide them into single fans of leaves. These require several years before the clumps become fully established and strong enough to show six or more stalks of bloom with a full quota of flowers on each.

(*To be continued.*)

THE GENUS PRIMULA.

(*Continued from p.* 34.)

IANTHINA (Balf. f.). Violet P.
(Candelabra.)

A BEAUTIFUL, robust, deciduous perennial species with a tuft of oblong or egg-shaped leaves from six to ten inches long, rounded at the tip, and tapering at the base into a long, winged stalk; margins furnished with sharp, curved teeth; both surfaces pitted with glands which exude a yellowish secretion—underside pale. Flower stem up to two feet tall, stout, coated with sulphur meal at the nodes formed by the umbels, which number one or two, and are placed one above the other. The numerous blossoms are of an intense violet colour, with broadly-heart-shaped or rounded, notched lobes, with at times a tooth in the sinus, and measure about one inch across; tube cylindrical, dilated upwards, with a ring in the throat, smooth outside, downy within. Flowers in July.

Grows near Sandakphu, in the Sikkim Himalayas, at about 11,500 feet above sea-level.

Culture: Good fibrous loam and peat, in a damp, open spot, should suit this species.

INVOLUCRATA (Wall.). Involucred P.
(Farinosae.)

A beautiful deciduous, non-mealy, perennial species of tufted habit, with elliptic-ovate, oblong-cordate, or rounded, blunt, leathery leaves tapering to a short or long stalk, in all one inch to three inches long; margins entire or furnished with obscure teeth. Flower stem four to twelve inches tall, bearing a loose umbel of three to six white blossoms on stalks about three-quarters-of-an-inch long. Corolla five-eighths-of-an-inch to three-quarters-of-an-inch across, divided into five flat, broadly heart-shaped, notched lobes; tube cylindrical, yellowish, twice as long as the calyx, with a ring in the mouth. Flowers in June. Introduced in 1848.

Illustrated in *Journ. Roy. Hort. Soc.*, Vol. XXXIX, 1913.

Grows in damp, half-shady spots, on the mountains of northern Europe, northern Asia and arctic America, reaching an elevation of 15,000 feet above sea-level in the Himalayas.

Culture: It succeeds in good loam and peat in a damp, shaded position.

IRREGULARIS (Craib.). Irregular-leaved P.
(Petiolaris-Sonchifolia.)

This plant is one of the many species, or perhaps, microforms, which connect P. petiolaris with P. sonchifolia. The stout, perennial rootstock produces a tuft of thin leaves about six inches long, with elliptic, oblong-elliptic or elliptic-egg-shaped, rarely oval or oval-lance-shaped blades, one-and-a-half inch to three-and-a-half inches long, somewhat abruptly narrowed into a narrowly-winged stalk; margins irregularly and sharply toothed; both surfaces nearly smooth. Flowers on stalks equalling or shorter than the leaves, coated upwards and on the calyces with sulphur-yellow meal. Corolla about three-quarters-of-an-inch across, with broadly oblong or egg-shaped segments sinuately-lobulate at the tip; tube cylindrical, about five-eighths-of-an-inch long. The colour of the blossoms is not recorded, but is probably some shade of purple. Flowers in March. Not in cultivation.

Grows in damp, shady places near Singaleelah and Nathu-la, in western Sikkim, at from 9,000 feet to 14,000 feet above sea-level.

Culture: It might be grown successfully in good loam and Oak leaf-soil, in a damp, shady situation. *A. W. Darnell.*

(*To be continued.*)

THE STATUS OF MECONOPSIS DAILEYI.

I HAVE had occasion, in the preparation of a revision of the genus Meconopsis, to study the taxonomy of M. betonicifolia, Franch., and M. Baileyi, Prain. Since the introduction to this country by Captain Kingdon Ward of plants under the name of M. Baileyi there has been considerable controversy as to the true identity of that species. It has been the custom in some gardens to grow these plants under the name M. betonicifolia, and it is the purpose of this note to record the conclusions arrived at after careful study of herbarium specimens and cultivated plants.

The original description of M. betonicifolia was based on specimens collected by Delavay in Yunnan which, as figured and described, have a glabrous ovary. Mr. George Forrest collected specimens from the type locality, and while some agree with Franchet's figure and description, others have the ovary slightly hairy.

During his 1924-25 expedition, Captain Kingdon Ward communicated plants from Lunang, Tibet, which had a densely hairy ovary, and which were referred to M. Baileyi, since they agreed with the incomplete description of that species, and were collected from the type locality. It is necessary to remember that Sir David Prain had very inadequate material on which to base his description, and no representation of the habit was possible. Since the acquisition of Ward's specimens, it is possible to determine with certainty the affinity of the species. There is no doubt that it agrees very closely with M. betonicifolia. Separation of M. Baileyi and M. betonicifolia has been attempted from vegetative characters, and the relative lengths of the style, but all these characters have proved unreliable. The separate identity of M. Baileyi, then, depends on whether the densely hairy ovary ascribed to it is constant. Ward has, however, collected specimens from a neighbouring locality on which the ovary is only sparsely hairy. Those specimens form an undeniable link with forms having glabrous and sparsely hairy ovaries collected by Franchet and Forrest.

That the two plants are conspecific seems evident, and what has been called M. Baileyi in our gardens may, at most, only be regarded as a geographical form of M. betonicifolia. The present extent of our knowledge indicates that the plants from Lunang are not worthy of specific rank. Horticulturists with experience of this genus realise how prone many species are to variation, and will probably agree that the inconsistency existing in the species under review can be explained as the result of natural variation. *G. Taylor, British Museum (Natural History).*

ADDITIONS TO THE LINDLEY LIBRARY.

THE following books and pamphlets have been deposited in the Royal Horticultural Society's Lindley Library, during the half-year commencing July 1, 1928.

Abercrombie, John. *The Complete Forcing-Gardener.* 12mo. 1781. (1).

Alphand, A. *Arboretum et fleuriste de la ville de Paris.* 4to. Paris, 1875. (1).

Aulagnier, A. F. *Dictionnaire des substances alimentaires indigènes et exotiques, et de leurs propriétés.* 2 vols. (in 1). 8vo. Paris, 1830. (1).

Billiard, Raymond. *L'agriculture dans l'antiquité d'après les Géorgiques de Virgile.* Illus. 8vo. Paris, 1928. (1).

Cottage and Garden. An account of a cottage and garden, near Tadcaster. 8vo. 1797. (1).

Dengler, Robert E. *Theophrastus de causis plantarum* (book one). Text, critical apparatus, translation and commentary. 8vo. Philadelphia, 1927. (1).

Drewitt, F. Dawtry. *The Romance of the Apothecaries' Garden at Chelsea.* 3rd ed. Illus. 8vo. Cambridge, 1928. (2)

Ermenonville. *Promenade ou itinéraire des jardins d'Ermenonville.* Illus. 8vo. Paris, 1788. (1).

Fischer, C. E. C. See Gamble, J. S. *Flora of the Presidency of Madras.*

Gamble, J. S. *Flora of the Presidency of Madras.* Pt. 8 (continued by C. E. C. Fischer.) 8vo. 1928. (3).

Gardening Hints.—Five hundred gardening hints. By 500 Gardeners. 8vo. 1928. (2).

Gaussen, H. *Végétation de la moitié orientale des Pyrénées, sol, climat, végétation.* Illus. 8vo. Paris, 1926. (1).

Gentil, A. *Dictionnaire étymologique de la flore francaise.* Sm. 8vo. Paris, 1923. (1).

Gérardin, R. L. *An Essay on Landscape; or, on the Means of Improving and Embellishing the Country round our Habitations.* Translated from the French (by De Lille). 8vo. 1783. (1)

Godron, D. A. *Flore de Lorraine.* 2nd ed. 2 vols. 12 mo. Nancy, 1861. (1).

Hartlib, Samuel. *His Legacy of Husbandry.* Sm. 4to. 1655. (1).

Hibberd, Shirley. *The Seaweed Collector.* Col. plts. Illus. 8vo. n.d. (4).

Humbert, Henri. "Végétation du Grand Atlas marocain oriental. Exploration botanique de l'Ari Ayachi." (*Bull. Soc. Hist. Nat. Afr. Nord*, xv). Illus. 8vo. Algiers, 1924. (1).

Hutchinson, J., and Dalziel, J. M. *Flora of West Tropical Africa.* Vol. 1. Pt. 2. Illus. 8vo. 1928. (1).

Johnson, A. T. *The Hardy Heaths.* Illus. 8vo. 1928. (2).

Johnstone, Mary A. *Plant Ecology.*—The distribution of vegetation in the British Isles, arranged on a geological basis. Illus. 8vo 1928. (2).

Kirk, J. W. C. *A British Garden Flora* . . Illus. 8vo. 1927. (2).

Lawson, William. *A New Orchard and Garden.* Reprinted from the third edition, with a preface by Eleanour Sinclair Rohde. Illus. 8vo. 1927. (1).

Leclerc du Sablon, Mathieu. *Nos fleurs, plantes utiles et nuisibles.* Col. plts. Illus. 4to. Paris, n.d. (1).

Ligne, Prince de. *Coup d'oeil sur Beloeil et*

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(1) Purchased. (2) Sent for review. (3) Presented by the Secretary of State for India. (4) Presented by Mr. J. Key Allen, F.R.S.A.

sur une grande partie des jardins de l'Europe. Nouvelle éd. 8vo. Beloeil, 1786. (1).

Merrill, E. D. *A Flora of Manilla.* 8vo. Manilla, 1912. (1).

Pass, C. van de. *Hortus Floridus*, the first book. Contayninge a very lively and true description of the flowers of the springe. With a preface by Eleanour Sinclair Rohde and calligraphy by Margaret Shipton. Illus. Obl. 4to. 1928. (1).

Pocket - Companion. The gentleman's, traveller's, husbandman's and gardener's pocket-companion. 8vo. n.d. (1).

Pottinger, E., and Prain, D. "A note on the Botany of the Kachin Hills North-east of Myitkyina." (*Rec. Bot. Surv. India*, i). 8vo. (Calcutta, 1898). (1).

Prain, Sir David. *See* Pottinger, E. *Botany of the Kachin Hills.*

Rey-Pailhade, Constantin de. *Les fougères de France.* Illus. 8vo. Paris, 1893. (1).

Rohde, E. S. See Lawson, W. *A New Orchard and Garden.* 1927.

—— See Pass, C. van de.

Rozier, Francois. *Cours complet d'agriculture.* . . . Par une Société d'Agriculteurs, rédigé par l'Abbé Rozier. 10 vols. Illus. 4to. Paris, 1793-1800. (1).

Scidmore, Eliza Rahamah. Java. *The Garden of the East.* Illus. 8vo. New York, 1907. (1).

Shipton, Margaret. *See* Pass, C. van de.

Tchihatcheff, Pierre de. *Asie Mineure*: description physique, statistique et archéologique de cette contrée. 3me. partie. Botanique. 2 vols. 8vo. Paris, 1860. (1).

—— *Atlas.* 4to. (1).

Trouvelot, Bernard, and Willaume, Fernand. *Manuel-guide des traitements insecticides et fongicides des arbres fruitiers.* 2nd ed. Illus. 8vo. Paris, 1927. (1).

Walcott, Mary Vaux. *North American Wild Flowers.* Vols. 1-3. Col. plts. 4to. Washington, D.C. 1925. (1).

Willaume, Fernand. *See* Trouvelot, B. *Manuel-guide.*

HOME CORRESPONDENCE.

Pyracantha Rogersiana.—My apologies are due to Mr. Coltman-Rogers for spelling Rogersiana with a "d," and I must plead carelessness. I hope, however, that the adding of a "k" to my own name arose from what I pleaded rather than retaliation. His note on this plant was interesting, and his advice to use it as a hedging plant might well be taken. *William Acworth, Chobham.*

Soil Sterilisation.—I am writing to compliment your correspondent, Mr. L. J. Moore, on his excellent improvisation for soil sterilisation. Because of its simplicity and economy, I consider it by far the best contribution to the subject it has been my privilege to see described, at least, so far as it affects the "small fry." In these gardens we have for some years used a discarded "canning equipment," but as a result of your correspondent's description of his methods, I find we can improve somewhat on our existing mode of procedure. A further point I should like elucidating is, which is the best method to adopt, steaming or baking? In this district we are in a very embarrassing position, having two authorities, each blessing the two respective methods. Mr. Shewell-Cooper has put down at the County Horticultural School a most efficient baking plant, and during the past season, at a conference of growers, it was brought to their notice and fully explained. Mr. Shewell-Cooper most emphatically declares that baking gives the best results, because of the fact that it leaves the soil in the best mechanical condition for the resulting crop; and I well remember as a student gardener at Kew, hearing the late Mr. Watson say that "the texture of the soil was more important than the quality." Mr. Shewell-Cooper has explained the construction and use of his plant in *The Fruitgrower*, and it has been widely commented upon. Quite recently, Professor Holmes Smith, the Government mycologist for this area, delivered a lecture before our local horticultural society, in which he advocated the steaming process in preference to baking, because of the danger in baking of destroying the beneficent bacteria, as well as the destructive type, and this seems to me rather a point in favour of steaming; and, further, is it possible to hope that with the steaming process certain plant foods may be rendered soluble and retained, whereas in baking they might be destroyed or given off as gas? With judgment, the texture of the soil need not be prejudiced to any degree as a result of steaming. In your excellent review of the subject in *The Gardeners' Chronicle* for October 1, 1927, page 259, it was the steaming process that gave such excellent results. Further testimony from experts on the two methods would be welcomed by many of your readers. *T. A. Summerfield, The Gardens, Alderley Park, Chelford.*

——I was interested to see a recent note on Soil Sterilisation in *The Gardeners' Chronicle*, but agree with Mr. John Butler, of Kindlington, that steam sterilisation is by no means the simplest, most effective and least costly. We have, at the Cheshire School of Agriculture, carried out experiments on Soil Sterilisation by all known means: (1) By chemicals of various kinds and types; (2) by a special machine which operates on a principle similar to that described by Mr. L. J. Moore (see *Gard. Chron.* of January 12) only on a larger scale; (3) by steam pressure from our dairy boiler (a similar scheme to Mr. Falconer's (see *Gard. Chron.* of October 1, 1928); and (4) by baking in a brick steriliser of the type used by Mr. Priestner and other Baguley growers. In our experience, this last method has proved much more satisfactory than any of the others. Our reasons for saying so are as follows: (a) The apparatus is easy and cheap to build—the materials for ours, which deals with three tons of soil at a time, cost only £12, and it was built by a semi-skilled man. Similar brick sterilisers for smaller quantities of soil could be built for £8 or £10. (b) In the steam method of sterilisation described by Mr. Falconer, the cost to the ordinary man is prohibitive, as the boiler would have to be bought especially for the purpose. Soil sterilised by steam is very liable to become sodden; I have, on occasion, seen it brought out of a steam steriliser in the form of mud. Such treatment ruins the texture of heavy soils. Further, a few days have to elapse before soil which has been sterilised by steam is sufficiently dry to use and this is often inconvenient. (c) The baking method described in our leaflet (a copy of which I shall be pleased to send to any interested reader) does everything steaming does, and yet the soil emerges in a perfect condition for sowing seeds, and needs no special preparation—it can even be used warm! *W. E. Shewell-Cooper, Horticultural Superintendent, Cheshire School of Agriculture, Reaseheath, Nantwich.*

Twin-flowered Cypripediums.—With reference to these, mentioned in your columns of December 8 (p. 457) and December 29, 1928 (p. 510), I have a plant here of Cypripedium insigne carrying thirteen flowers on twelve stems, one stem with two perfectly formed flowers about two inches apart. *J. E. Jones, Highfields Gardens, Marlow, Bucks.*

Dangers from Poisonous Plants.—The deaths of eleven valuable farm animals from Yew leaf poisoning near Dingwall, the county town of Ross-shire, the other day, reminds us of the possible dangers from this source. We have a number of poisonous plants in the British Isles, the principal of which are Aconite (Monkshood), Belladonna, Arum, Box, Black Bryony, Broom, Laurel, Cherry, Foxglove, Cowbane, Hemlock, Marsh Marigold, Sorrel and Ivy. Botanists have also introduced from abroad many plants which are cultivated for their medicinal value. The poison is more active among these plants in spring and summer, when the plants are green. Many of the demesnes of our county mansions, contain areas of grass surrounded by copses, thickets, or plantations, containing Yews, Laburnums and Rhododendrons, and where these exist precautionary measures are necessary. Farm stock is often put upon these grass areas, and although animals do not readily eat the poisonous shrubs named when the grass is good, there is always a danger present. All such beltings should be carefully fenced off from grass areas whereon grazing stock are allowed to roam. *W. K.*

COLONIAL CORRESPONDENCE.

NEW MOON SOWINGS.

UNDER this heading, in the issue of *The Gardeners Chronicle* for August 4, 1928 (p. 97), the writer evidently is somewhat credulous as to the results of such practices. Many scientific authorities have definitely stated in the past the folly of adhering to the moon theory as a guide to sowing seeds, yet I can prove conclusively that all unbelievers of the theory are wrong. It not only applies to the germinating of certain seeds, but has a marked influence on seed production, when pollenating is done within a few days of the full moon. The theory as adopted by me for the last forty years, applies only to the raising of certain seeds under natural conditions. I sow Chrysanthemum seeds in August or September each year. The seeds are sown about ten days before full moon; should the weather be favourable, nearly all the seeds have germinated by the full moon. If the weather is not favourable (cold changes, etc.), they remain in the boxes until the next full moon. A few may remain until the third, or even fourth, before germinating. By adopting this method I seldom have any damping-off; this would probably be otherwise if the seeds were sown under artificial conditions. This rule applies to many kinds of seeds. I have had Roses germinate intermittently for five or six months, and invariably all came through within a few days of each successive full moon. I have reason to believe that many gardeners may enlighten scientists on the fact that the moon plays an important part in the periodical germination of many kinds of seeds, including seasonal weeds, etc., which always come up and flower, as near as possible, the same time each year. The writer has observed also the larger amount of pollen in flowers on, or about, the full moon, compared with other times, and further, the activities of bees and other fertilising agents. *Thomas W. Pockett, Victoria, Australia.*

FOREIGN CORRESPONDENCE.

ASCLEPIAS TUBEROSA.

IT was while rambling through open country, some thirty miles from New York city, that I obtained my first glimpse of this beautiful Swallow-wort in its native habitat. It was growing in great clumps on a rather dry, sunny slope, and the marked superiority of the wildings over plants seen cultivated in British gardens was very apparent. The gorgeous, bright orange-coloured flowers were conspicuous, even when viewed from a distance, so much so that they had attracted the attention of passing motorists who were despoiling the countryside by gathering great armfuls to carry away.

Known throughout the north-eastern United States by the names of Butterfly-weed and Pleurisy-root, this plant varies in height from eighteen inches to four feet six inches. The stems are very leafy and rough with hairs, much branched towards the apex, and bearing the flowers either in umbels arranged to form a terminal corymb, or in racemes scattered along the branches. The leaves vary in shape from linear to oblong-obvate, and they are mostly scattered and sessile, or nearly so. Unlike many members of the genus Asclepias, this species has no milky latex.

A rich light soil and a sunny, sheltered position, provide the conditions necessary for the successful cultivation of this plant in Britain. In most localities protection of some description may be essential during severe winter weather. It may be propagated by division in autumn or spring, or by sowing seeds under the protection afforded by a cold frame during the spring. *T. H. Everett.*

MARKET FRUIT GARDEN.

On adding up my rainfall figures for the year 1928, I am surprised to find that the total amounts to so much as 32·66 inches, some two-and-a-half inches over the average for the district. The glorious summer gave one the impression of a very dry year; but the drought lasting through July, August and September was largely balanced by the very heavy rainfall of January, October and November. Fortunately, 1928 closed with a fairly dry December (rainfall 3·12 inches), as a result of which the land has been unusually sound throughout the winter so far, no doubt a very favourable condition for fruit trees and bushes. Such work as winter spraying, pruning, and the application of manures, has made good progress.

Spraying at High Pressure.

For this season's spraying, some improvements and additions have been made to the appliances. A three-throw pump has been substituted for the old two-throw machine, which has given some nine years of good service. With the new pump it is easy to supply four nozzles at a pressure of between 200 and 300 pounds per square inch. Most growers now realise that pressure is important. Some washes, notably the tar distillates used in winter, give better results if applied at high pressure; while, naturally, the work is done more thoroughly, easily, and quickly with a large cone of spray which reaches readily to the tops of the highest trees. A man can wet a tree all over in very much less time if he has plenty of pressure behind the nozzle. As a further means of speeding up the work, another 100 yards of steel portable main piping have been added to the plant. This allows of two main pipes being laid down instead of only one, so that spraying is not interrupted while the piping is moved. So soon as the sprayers have finished all the trees they can reach from one main, they shift their hoses to the next, which has been laid down for them in advance. In this way there is a saving of some two hours of shifting work per day, giving about a day's extra actual spraying in a week. Rapid work is obviously essential in spraying on a large scale. In winter there is none too much weather suitable for the operation, and the most must be made of such opportunities as occur. In spring and summer, when spraying to prevent Apple scab, it is even more necessary to get over the ground quickly, in order to get the spraying done at the correct stages of vegetation.

Apple Capsid.

The tar distillate washes are curiously uncertain in their effect on Apple capsid. It used to be stated that they gave no control at all of this troublesome pest, but in some recent trials good results have been obtained, while in others the treatment has failed. During 1928, Mr. F. V. Theobald made trials at two centres, one near Worthing and the other at Selling, Kent. In both cases the wash was applied at ten per cent. strength and with plenty of pressure. The result at Worthing was markedly beneficial. Not only were the foliage and growth much more satisfactory on the sprayed than on the control trees, but there was a decided increase in the proportion of saleable fruits. Trees in the same plantation, heavily sprayed with hot lime-wash, were hopelessly injured by capsids. At Selling there was a similar improvement in foliage and growth due to the spraying, but not the same benefit to the fruits. The reason for this is probably that the set of fruits was very light, so that the small crop was greedily sought after by the much reduced number of capsids. These results are important, because it has hitherto been the general experience that, in the south and south-east, tar-distillate washes have been useless against capsids, while in the west they have often been found to give considerable control. Why the result should be so uncertain has yet to be explained. It may be because the tar-distillates are not stable and capable of standardisation; or perhaps it is due to variation in conditions following spraying. The fact that these washes do, at times, control capsids is hopeful, because it will no doubt stimulate chemists to strive for improvements which will make them more effective. Already, at the Long Ashton Research Station, a wash has been prepared from high-soluble tar-distillate which, so far as it has been possible to test it at present, gives a better control of capsids than the ordinary commercial washes hitherto available.

It is most desirable that a winter wash to control capsids should be found, because it is exceedingly difficult for growers to deal with both capsids and scab by spraying around the time of flowering. Both troubles call for treatment at the same time and with different washes which cannot effectively be combined, and which need different methods of application.

The present position is that, while tar-distillate washes are uncertain in their effect on capsids, they are well worth using against this pest, the Long Ashton wash giving the best hope of success. In any case, winter spraying with tar-distillate is excellent as a preliminary stage in the campaign against capsids. In the Kent and Sussex trials mentioned above, a considerable proportion of the fruits was clean at first, but more of them became marked by the insects as the season advanced. It may be assumed, therefore, that, if the winter spraying had been followed up by one or two applications of nicotine and soap wash, before and after flowering, the result would have been excellent. The winter spraying gives the great advantage of sound foliage for a start, largely because it controls aphides and Apple suckers, thus making the work of subsequent sprayings for capsids easier and more effective.

The above remarks apply only to the Apple capsid. In one of the trials the green Currant capsid was not affected by spraying with tar-distillate at six per cent. strength.

Unpleasant Work.

People often remark that fruit-growing must be an ideal occupation. To the grower himself it may be so, but his workers are called upon to carry out many tasks that are most unpleasant. Take the present winter's work on my own place, for example. For about a month most of the hands were engaged in repairing old drains and laying new ones, miserable and heavy work in the cold and wet conditions prevailing. After this they went on to the mixing and distribution by hand of several tons of chemical fertilisers, including calcium cyanamide, which made them black all over and burnt the skin rather badly. Several raw and swollen arms were the result. A light and narrow manure distributor that can be drawn between closely-planted trees is badly needed. Now the men are engaged, whenever the weather is favourable, in tar-distillate spraying, another job which is painful for the skin and injurious to the clothes. One does what is possible in the way of providing overalls and plain lanoline to apply to the face and hands, but considerable discomfort has still to be endured. I think the last straw would be added if dry dusting succeeded liquid spraying.

Deep and Shallow Soils.

During draining operations this winter, I have realised fully how very shallow my soil is in places. In some cases there is not more than nine inches of good soil over the unweathered subsoil, much of which is of a most undesirable character. Many of my difficulties are due to this condition, but for all that, I should hesitate to shift to land such as is commonly considered to be most favourable for fruit-growing. I have always been an advocate of deep, well-drained soils for fruit trees, but I am beginning to doubt whether these give the best financial results. Certainly, such land suits the trees, which make wonderful growth; but in many cases they give fruits of poor colour. For some crops this is not an important point, but for dessert Apples colour is a selling factor of the greatest value. Mine is dessert Apple land; I ought not to grow anything else. No doubt there are soils that are deep and yet give the restricted growth which makes for fruitfulness and high colour—the clays of West Sussex, for instance—but they are not easily found. I am not at all sure that the deep brick-earths and other free-working loams generally considered to be ideal for fruit-growing are not more desirable for the nurseryman than for the commercial grower. *Market Grower.*

FRUIT GARDEN.

CORDON PEARS.

Pears are the most capricious of all the hardy fruits, and unless conditions are very favourable indeed—a well-drained and not too heavy loam in a warm situation, sheltered from the east and north winds—one can never be even moderately sure that any one of the choice varieties will be a success until it has been tried, and even then a wet and cold season may reduce it to below the level of a Pitmaston Duchess. For instance, after the poor summer of 1927, Doyenné du Comice and Beurré Superfin were quite good with me, although the latter was much russetted, but Emile d'Heyst, Le Lectier, Conference and Louise Bonne of Jersey were little better than Turnips. Hence the charge of caprice against Pears, and partly on that account I find a row of cordon Pears one of the most interesting features in the garden. Some Pears, like Catillac and Clapp's Favourite, attain a large size by August, while some, notably Olivier de Serres, Joséphine de Malines and Winter Nelis, are not much larger than Walnuts then, and yet weigh a quarter-of-a-pound or more each at the end of October.

I have mentioned cordons partly because of the greater number of varieties which may be grown in a given space, and partly because with bushes or pyramids, one is apt to get too many of one variety, especially when two or three are in season at the same time, as will generally happen at the height of the Pear season—mid-October to mid-November. With thirty cordons in twenty-five varieties, one can have a fairly well assured succession in a moderately good season from August to April inclusive. Of those varieties with an extended season, notably Joséphine de Malines—often a slow bearer—Olivier de Serres and Easter Beurré, one is not likely to have too many fruits, and bushes may be more useful than cordons. The same applies to stewing Pears.

The ground should be well worked, a month before planting, if possible, applying a dressing of bone-meal and decaying vegetable matter rather than manure. It is obvious the site should be chosen carefully and, if away from a wall, a row of cordons should run from south to north. A catalogue should be studied with the help of an experienced friend unless, which is still better, the planter has the experience himself. In any case, he will do well to learn anything he can from his neighbours as to the vagaries of Pears in the locality. For supporting the cordons, six to eight feet Bamboos, held in position by a strained wire, should do for the first summer, perhaps for two, but later they will need stout posts, not too far apart, with two or three wires, the Bamboos being lifted until the trees attain their full length, which, of course, they will not all do at the same time. It is assumed for this purpose that the cordons will be planted diagonally at two feet apart.

If the trees are not planted by the middle of December, it is doubtful if anything is lost by not planting them before the end of February, when roots begin to be active and the soil less cold. If later than this, they need careful attention in a dry spring. *A. P.*

VEGETABLE GARDEN.

PEAS FOR EARLY SOWING.

While I would recommend the sowing of early Peas in boxes and planting the seedlings out later, especially on unkind soils, there are some climates and districts where the conditions are suitable for sowing seeds out-of-doors, if facilities for raising the plants under glass are not available; the old method of sowing seeds out-of-doors in the autumn is seldom practised now. Successful results may, however, be expected with some degree of confidence, if seeds of the round-seeded varieties, such as the Pilot, or Superb, are sown in light soil in a warm, sheltered position; but if such a situation is not available, and particularly if the soil is heavy in nature, it is better to defer the first sowing until the latter end of February or the beginning of March; even then it is courting disaster if the soil is not in the right condition to receive the seeds.

In specially favoured places, such varieties as Pioneer, Laxtonian, Eight Weeks and Little Marvel, should succeed if the weather conditions are suitable for quick germination, and to facilitate this they should be sown in drills and covered with a mound of sand three inches deep, while if wattle hurdles may be placed around the plot, these should ward off the cold, cutting winds which are so disastrous to early Peas. In some gardens there are narrow borders against the sides of glasshouses, and against low walls, and where these exist there should be little trouble experienced with early-sown Peas; most of the varieties catalogued by the leading seedsmen for early sowing are suitable for such positions. I have, however, come to the conclusion that it is much safer, provided a glasshouse is available, to raise all early Peas in boxes. By so doing, success is assured, fewer seeds are required, germination is much quicker, and, if the plants are grown on quite hardily, much better crops result, with the added advantage that the very best Marrowfat varieties may be grown.

To produce early crops under glass, such varieties as Eight Weeks, fifteen inches, and Early Giant, three feet, may be sown in November and early December, and the seedlings should be ready to plant out in cool houses, pits or frames, early in January, to produce a very profitable crop. Further sowings of the same varieties, together with Pioneer, may be made in January, and if the seedlings are grown under cool conditions they should provide good plants for planting out on a warm border in early spring, to follow those in the houses and frames. It is necessary to harden the plants well before they are planted out in the borders; this may be accomplished by standing the boxes in a well-sheltered corner. When they are planted, some twiggy sticks placed along the rows should afford the seedlings some shelter.

Further sowings in boxes should be made early in February. For this purpose the variety Witham Wonder may be sown, for it has proved very hardy with me, and also very prolific, while, being dwarf, it does not require much space. At the end of February such varieties as Bedford Champion, early, with Duke of Albany, and Alderman, of the second-early and taller varieties, may be sown, followed in March by that fine variety Admiral Beatty, which, provided it is of a good stock, is one of the best Peas in cultivation. If the variety Early Superb is sown out-of-doors at the same time as the last sowing is made in boxes under glass, it should afford a good succession to the latter. When the seedlings of Early Superb are showing above ground, seeds of Lancashire Lad (two feet) may be sown, to be followed by other suitable varieties at intervals of ten days until June 21, which is usually late enough for the sowing of Pea seeds in most districts. While the varieties I have enumerated above have proved good with me, it is well-known that some varieties do better in one district than in another; it is therefore advisable to sow only proved varieties in bulk, trying others in small quantities.

Boxes four inches deep are suitable receptacles for the Pea seeds, while the compost should consist of two parts loam, one part spent Mushroom-bed manure, and one part leaf-soil. Seventy-two pairs of seeds are best sown in each box (if one foot wide by two feet long), as the soil adheres better to the double root-system, and the plants grow better when planted out if some soil is attached to the roots. Another method is to sow the seeds in long, narrow boxes, wider at the bottom than the top, and with a false bottom supported by wires; when the wires are cut the whole contents of the boxes may be dropped in their places in the prepared trench, without any root-disturbance. When planting Pea seedlings draw a ridge of soil up to each side of the rows, and then place the sticks in position; very little further attention will be required until the Peas are ready to pick, other than examining them occasionally, in case of depredations by birds and insects, and attending to stopping and pinching out side-shoots if exhibition pods are required. All ground for Peas should be prepared well. The soil for early Peas should be trenched, but the best method of all is to plant the Peas in ground previously occupied by Celery, digging it well before planting. *Allan Falconer.*

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting of this Society, held on January 4, 1929, the members of Committee present were:—Messrs. H. Astley Bell (in the chair), J. B. Adamson, A. Burns, A. Coningsby, A. Keeling, D. McLeod, W. J. Morgan and H. Arthur, Secretary. Mr. D. Pitts was invited to sit with the Committee.

Awards of Merit.

Cypripedium Kestrel (*C. nitens Leeanum Bectoniae* × *C. Swallow*) and *C. Waratah var. Chieftain* (*C. Euryades, Carter Place var.* × *C. Swallow*). From Captain W. Horridge.

Cypripedium Elaine (*C. Mona* × *C. Leeanum*); *Odontioda Leonatus* (*Cochlioda Noezliana* × *Odontoglossum Thompsonii*); and *Adaglossum Pittsii* (*Ada aurantiaca* × *Odontoglossum Pescatorei*). From Messrs. A. J. Keeling and Sons.

Cypripedium Lucinda var. Martin David Ramsay (*C. Lucernale var. Lady Patricia* × *C. Alcibiades var. Illustris*). From Mrs. Bruce and Miss Wrigley.

Cypripedium New Year (*C. Christopher* × *C. The Ghurka*). From J. B. Adamson, Esq.

Groups.

J. B. Adamson, Esq. (gr. Mr. J. Howes), Blackpool, staged a group to which a Gold Medal was awarded. Cypripediums in variety, including C. Minotaur, C. Perseus, C. Thisbe, C. Olympus var. The Chairman, C. Curlew, C. Bedfordae, C. Stamperland, C. Niobe superbum, C. Hercules, C. Memoria var. F. M. Ogilvie, and C. Carola. Odontoglossum crispum, O. Canopus and O. Illustre var. superba; Odontioda Colinge var. Ruth; Brasso-Cattleya British Queen, and fine specimens of Vanda Amesiana, were among his outstanding subjects. Mrs. Bruce and Miss Wrigley (gr. Mr. A. Burns), Bury, staged a group which was awarded a Large Silver Medal; it contained grand examples of Cypripedium Alcibiades var. Illustris, C. bourtonense, C. March Along, C. The Pearl var. Lady Blanche, C. Invincible and several Bridge Hall Cypripedium seedlings, notably C. Actaeus var. Lady Greensleeves, C. Queen Velma var. Queen Ena, C. Helsa var. Astrid, C. Carlo var. Young Pretender, C. Mario var. Leonora Cook, C. Ruzzie var. Santler, C. Caractacus var. Janet Coffin, and C. Britain's Monarch var. George.

Messrs. A. J. Keeling and Sons were also awarded a Large Silver Medal for a group containing Cypripediums in variety, including C. Elaine, C. F. M. Ogilvie var. The King, C. Perseus, C. Goldylocks, C. Makeda, C. Nesta II, and C. Prince Albert, together with Odontioda Leonatus and O. Brilliant, and the rare Adaglossum Pittsii; while Captain W. Horridge (gr. Mr. A. Coningsby), Bury, and Mr. D. McLeod, Chorlton-cum-Hardy, staged Cypripediums in variety.

At the meeting held on January 18, the members of Committee present were:—Messrs. J. B. Adamson (in the chair), A. Burns, A. Coningsby, J. Evans, A. Keeling, D. McLeod, W. J. Morgan and H. Arthur (Secretary).

Awards of Merit.

Cypripedium Sumurun var. Snowball; *C. Elidia* (*Elise II* × *Idina Leeana*), and *C. Elidia var. Cosmos*. From Captain W. Horridge.

Cypripedium Eurydore (*Euryades splendens* × *Commodore*), and *C. Mona var. Dolcis*. From J. B. Adamson, Esq.

Cultural Certificate.

To Mr. A. Burns, for Calanthes.

Groups.

J. B. Adamson, Esq. (gr. Mr. J. Howes), Blackpool, staged a group to which a Gold Medal was awarded; it contained Cypripediums in great variety, including C. Roundhead, C. Lady Evelyn James, C. Viking, C. Commodore, C. Mrs. F. Sander, C. Madame Jules Hye, C. Thunderer, and C. bourtonense magnificum, together with Odontoglossum aspersum, Sophronitis grandiflora, Oncidium tigrinum, and Epidendrum Wallisii.

Mrs. Bruce and Miss Wrigley (gr. Mr. A. Burns), Bury, were also awarded a Gold Medal for a magnificent group of Calanthes, notably C. William Murray, C. Bella, C. Bryan, C. Kenneth, C. Veitchii and C. vestita oculata rubra.

Mr. John Evans, Colwyn Bay, received a Large Silver Medal for a group in which Cypripedium F. M. Ogilvie, C. Eurybiades var. The King, C. Makeda, C. Anita compactum, C. Alcibiades var. Illustris, Odontoglossum eximium and O. Alvara, Odontioda Lorna and O. Patricia, were prominent, while Messrs. A. J. Keeling and Sons, Bradford, staged Cypripedium Ena, C. Argo, C. Merlin and C. Prince Albert, and Odontoglossum regale var. splendens. Mr. D. McLeod, Chorlton-cum-Hardy, showed Cypripediums in variety.

The next meetings of this Society will be held at the Houldsworth Hall, 90, Deansgate, Manchester, on February 1 and 15, 1929. The Committee will sit at 12 o'clock noon each day.

ROYAL HORTICULTURAL.

The following awards have been made to the undermentioned vegetables by the Council of the Royal Horticultural Society, after trial at Wisley.

Carrots.

Awards of Merit.

(19) *Early Guerande*, sent by Messrs. Speed, Evesham; (21) *Perfection*, sent by Messrs. R. H. Bath, Wisbech; (48) *Nantes Selected*, sent by Messrs. Zwaan and van der Molen; (32) *Carenton*, sent by Messrs. Nutting and Sons, London; (99) *James' Intermediate*, sent by Messrs. James Carter and Co., Raynes Park; and (96) *Intermediate Selected*, sent by Messrs. Dobbie and Co., Edinburgh.

Highly Commended.

(6) Paris Market, sent by Messrs. Olsen, Denmark; (8) Early Gem, sent by Messrs. W. H. Simpson; (17) Oxheart (6184), sent by Messrs. C. C. Morse and Co., San Francisco; (61-64), Chantenay (6373, 5184, 57-47, 57-25), sent by Messrs. C. C. Morse and Co., San Francisco; (14-15), Scarlet Horn, sent by Messrs. C. C. Morse and Co., San Francisco, and Messrs. Webb and Sons, Stourbridge; (12) Early Horn Improved, sent by Messrs. James Carter and Co., Raynes Park; and (9, 11) Early Scarlet Horn, sent by Messrs. W. H. Simpson, and Messrs. Morris, Birmingham.

Commended.

(22-29, 31) Amsterdam Forcing, sent by Messrs. Zaaizaadvereeniging, Nunhem; Messrs. Zwaan and van der Molen; Messrs. Atlee Burpee and Co., Philadelphia; Messrs. Sluis and Groot, Holland; Messrs. Spruijt, Holland; Messrs. Harrison, Leicester; Messrs. Daehnfeldt and Jensen; and Messrs. E. Benary, Germany; (13) Dutch Early Short Scarlet, sent by Messrs. Sluis and Groot. All the foregoing commended varieties were considered to be alike.

PARKS AND BOTANIC GARDENS SUPERINTENDENTS.

The annual meeting of the Scottish Branch of the Parks and Botanic Gardens Superintendents' Association was held in the City Chambers, Dunfermline, on January 12. Prior to the meeting, the members received a very cordial welcome from Provost Wilson, and were afterwards entertained to tea by the members of the Town Council.

Mr. William Besant, Director of Parks, Glasgow, occupied the chair, and it was unanimously agreed that the branch be continued during the ensuing year.

Mr. Besant, Glasgow, was re-elected President, and Mr. Jeffrey, Edinburgh, and Mr. Clark, Aberdeen, were re-elected Vice Presidents;

Mr. Campbell Perth being appointed Secretary and Treasurer. The members of Committee elected were Mr. Lauder, of Coatbridge; Mr. Campbell, of Helensburgh; Mr. Fleming, of Paisley; Mr. Brown, of Rutherglen, and Mr. Graham, of Carnegie Park, Dunfermline. It was agreed that the next annual meeting be held in Perth in April, 1930, and that, a meeting be held in Perth, in April of this year, to appoint delegates to attend the annual meeting of the Association at Chelsea, in May. Very cordial votes of thanks to the Provost and Town Council were proposed by Mr. Besant and Mr. Jeffrey, for the very kindly welcome which the members had received at their hands.

NATIONAL ROSE.

THERE was a good attendance at the Annual General Meeting of members of the National Rose Society on January 16, at the Caxton Hall, Victoria Street, Westminster, the room being comfortably filled. Mr. H. R. Darlington, the retiring President, was in the chair, and among other Rose enthusiasts present were Mr. Arthur Johnson, President elect, Miss Ellen Willmott, Mr. J. N. Hart, Mr. C. C. Williamson, Mr. H. Oppenheimer, Mr. J. R. Mattock, Mrs. C. A. Tisdall, Mr. Owen Murrell, Mr. Walter Easlea, Mr. J. S. Harvey Cant, Mr. S. A. R. Preston-Hillary, Hon. Treasurer, and Mr. Courtney Page, Hon. Secretary.

The report of the Council, which was adopted unanimously, records a most gratifying state of affairs. During the year 1928, 1,752 new members joined the Society, making a total of over 15,500. Five exhibitions were held, and the report mentions an appreciable advance in the quality of the blooms set out at these shows, as well as increased attendances. The Rose Conference also receives due attention in the report. The Society's trial of new Roses appears to be going ahead well, for over 2,000 plants have been received from raisers. The Council fully appreciates the importance of ensuring, so far as is humanly possible, that no buds of any of the varieties on trial shall be taken away and, with this end in view, has made a rule that members only shall be allowed to visit the trials.

Several matters of interest were discussed. Mr. Harvey, Guildford, mentioned the difficulty affiliated Societies experienced in obtaining competent judges of Roses for their shows, and suggested that the Council might well consider the possibility of standardising the judging—hold examinations of potential judges, and grant certificates to those who successfully pass the test. The President said he was sure the Council, which has devoted considerable attention to the matter, would give most careful consideration to the suggestions, but he pointed out the obvious difficulties which would attend any effort to meet the speaker's wishes. Mr. Herbert Cowley referred to the Gold Medal awards of the Society, and his contention that there was a certain amount of dissatisfaction concerning the awards evidently appealed to many present. Mr. Cowley suggested that now the Society was conducting trials of new Roses no variety should be awarded the Gold Medal until after trial. In reply, Mr. Darlington stated that he believed the awards to varieties at the trials would be quite distinct from any now given. The present award of the Gold Medal has a well-known character. It is given to Roses as staged, and he felt that it must be so in order to give some encouragement to raisers. The raising of new Roses is not a mechanical affair. There are a thousand and one disappointments to be met, and if the suggestion that no award should be given until the variety has been grown at the trials were adopted, too long a time would elapse. Mr. Darlington, continuing, stated that the award of the Gold Medal proved that, on one occasion at least, the Rose shown was capable of great things and this, in his opinion, is all that can be hoped for.

The financial summary, which was presented by the Hon. Treasurer, met with unstinted approval, as well it might. Although, as we remember happened with another special flower society during the year under review, a provincial Society, which invited the N.R.S. to hold a show in conjunction with it, had not met its obligations promptly enough for the donation to be included in the current accounts, the receipts were over £500 in excess of the previous year's. The Hon Treasurer made interesting, and not too laboured, comparisons between the position of the Society to-day and in 1914, and incidently paid a well-deserved tribute to the work of the Hon. Secretary, to whom, he insisted, the credit of the Society's splendid financial and numerical position was entirely due. With an increased membership it was a natural corollary that the expenditure should increase, so that such items as printing, stationery and postages were greater than before. Mr. Preston-Hillary expressed the definite opinion that the expenditure on the trials was well incurred and that by improving the cultivation of the Rose it would greatly improve the membership of the Society. Mr. Arthur Johnson expressed considerable surprise at the economy of the Society's working expenses which were, he said, astonishingly low and compared most favourably with those of any business concern in the city or elsewhere.

The proposed alteration of Rule 20 was a very minor affair and, as it tends to improving the amenities of the Society's working, was adopted immediately.

There were forty candidates for the thirty-six seats on the Council, and when the result of the voting was declared, it was found that Mr. F. M. Elgood, Mr. E. C. Green and Dr. R. C. Turnbull of the old Council were not re-elected, and that the new members were Mr. H. G. Crawley, Mr. A. Dickson, junr., Mr. A. T. Goodwin, Mr. Samuel McGredy, Mr. E. H. Plesance and Mr. W. D. Prior. After the customary votes of thanks the members partook of tea and were entertained with music.

Obituary.

William Curtis.—Four brothers, natives of Barnstaple, Devon, and all engaged in horticultural pursuits, have now passed away. The death of Charles, the youngest, an old Veitchian collector and, later, Superintendent of the Penang Botanic Gardens, was recorded in these pages last autumn; John, James and William resided in Wimbledon for many years and were gardeners of repute about twenty-five or more years ago. William Curtis moved to Worcester Park after the breaking up of the Mount Ararat estate, and with his younger sons commenced business as florist, and nurseryman. The war, and the death of the youngest son in France, were great misfortunes from which he never seemed to recover, although his general health was good until on January 10 he fell and dislocated his thigh; from this accident and the attendant shock he died a week later. Three sons and two daughters survive him, the eldest son being the Managing Editor of this journal.

Robert Andrew Duthie.—With deep regret, I record the death of Mr. Robert Andrew Duthie, aged sixty-five, at the Viceregal Gardens, Phoenix Park, Dublin, after a brief illness. He was laid to rest on the 16th inst., in Castleknoch Churchyard, Co. Dublin, many friends attending to pay the last token of respect, emphasised by a wealth of floral tributes. Mr. Duthie was a keen and skilful Scotch gardener long located in Ireland, filling in later years the important post of head of the Chief Secretary's gardens, from which he was transferred to the Viceregal charge some years since, and here Mr. Duthie did much to restore the prestige of these gardens once famed for fruit-growing generally, and Grapes in particular. His ability in the latter direction was pleasingly recognised by Mr. T. M. Healy, K.C., when invited to cut the first bunch of Grapes from vines planted fourteen months previously, by having a silver cup engraved: "Presented to Mr. Robert Duthie by T. M. Healy, K.C., First Governor-General of the Irish Free State," etc., etc. *K., Dublin.*

TRADE NOTE.

IT is highly satisfactory to be informed by Messrs. Rayner and Co., the well-known London Patent Agents, that last year will hold the record for patents, which reached the high total of 38,953, against the previous record of 36,680 in the year 1920. This is a matter of sincere congratulation, showing clear signs of our industrial progress, which should augur well for better trade for 1929. The Wireless world and the transmission of both sound and vision, as represented by the gramophone and the films, are responsible for a large portion of the increase; but the records show a general improvement in all trades, including those relating to the universal subject of the garden. Many people would probably consider that there was an important field for invention when the work of nature is so closely allied to the home. On consideration, they will see that the numerous tools employed in the garden form an important industry, and also the chemical side as to manures and fertilisers must be fully recognised; and here there are great opportunities for amateurs who love their gardens to make improvements to save labour and improve the products, and the records show that advantage has been taken in this respect, and indicate a revival of interest in inventions and patents associated with the garden.

ANSWERS TO CORRESPONDENTS.

APPLE TREES CANKERED.—*W. W.* The Apple shoots are suffering from a severe bud infection of the canker fungus. Remedial measures include: (1) The removal and destruction of badly cankered shoots and the wounds covered immediately with white lead paint; (2) keeping in check attacks of woolly aphis, which is often a precursor of canker, the fungus spores entering through wounds made by the insects; (3) annual spraying in early spring before the buds open, with lime-sulphur solution, using one gallon of lime-sulphur in nine gallons of water, and (4) drainage of badly drained and heavy land—badly-drained soils encourage the spread of the disease and cause the trees to become less resistant to attack.

DIMENSIONS OF ASSOCIATION FOOTBALL GROUND.—*Regular Reader.*—The measurements of an association football ground are as follows: Length 100 to 130 yards, width 50 to 100 yards (120 yards by 90 yards is usual); goal posts eight yards apart, with the cross-bar eight feet from the ground; goal area, six yards from goal line, 20 yards across; penalty area, 18 yards from goal line, 44 yards across; penalty kick mark, opposite centre of goal, 12 yards from goal line; kick-off circle, centre of ground, radius 10 yards. The corners should be marked with a flag on a staff not less than five feet high, while it is usual to mark the area from which the corner kick may be taken with an arc three feet from the flag post.

HEAD GARDENER AND COTTAGE.—*Civis.* It would appear that you were engaged on terms including the use of the cottage for yourself and your family, and that your wife was subsequently taken into the employer's service as housekeeper. So long as she remains in such employment the employer can require her to reside in his house, but on such employment being determined she would be entitled to return to the cottage and live with you, and the employer could not refuse to allow her to do so while you remain in his service on the terms originally arranged.

Communications Received.—F. P. K.—W. M.—S. A.—A. T. J.—T. H.—R. F.—H. S.—O. E. F.—R. R. O.—A. U.—J. C.—A. G.—W. S—J. H.—C. H.—A. J. T.—W. B. G.—J. T. M.—W. H. J.

THE
Gardeners' Chronicle
No. 2197.—*SATURDAY, FEBRUARY* 2, 1929.

CONTENTS.

Alpine garden—
  Acaena microphylla 78
  Ajuga metallica crispa 78
  Oxalis lobata ... 78
Bulb garden—
  Crocus biflorus ... 77
Cook, Mr. Henry H.... 72
Flower garden—
  Annual flowers ... 76
Garden manures for February 86
Hardy flower border—
  Argemone grandiflora 77
  Inula Roylei ... 77
  Polyanthus Barrowby Gem 77
Indoor plants—
  Lapageria rosea and its varieties ... 76
January's weather ... 72
John Innes Horticultural Institution ... 83
Lilies, a new disease of 82
Mesembryanthemum 84
Notice of book—
  Flowers of Kashmir 86
Obituary—
  Cottam, Gledhill ... 90
  Evans, Frank ... 90
  Gabriel, Johannes... 90
  Gérome, Joseph ... 90
  Smet, Romain de ... 90
Photosynthetic activities of green plants... 71
Plant history in nomenclature ... 81
Primula, the genus ... 85
Propagation of Rhododendrons by cuttings 79
Royal Gardeners' Orphan Fund 72
Royal Horticultural Society's New President... 71
Societies—
  Dublin Naturalists' 90
  Gardeners' Royal Benevolent Institution 88
  National Carnation and Picotee ... 88
  Orchid Club, the ... 87
  Reading Gardeners' 90
  Royal Horticultural 89
  United Benefit and Provident ... 90
Subterranean Orchid, a 71
" Sweet Pea Annual " 72
Trees and shrubs—
  Erinacea pungens... 78
  Japanese Azalea, a 78
  Magnolias 78
Vegetable garden—
  Canson Sprouting Broccoli, the ... 87
  Winter greens ... 87
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 80
Week's work, the ... 74
Yellow Day Lilies in America 84

ILLUSTRATIONS.

Argemone grandiflora 73
Cook, Mr. Henry H. 72
Crocus biflorus 77
Japanese Azalea in a Heidelberg Garden 75
Rhododendron cuttings: R. Cunningham's White, 79; R. hippophaeoides var., 79; R. intricatum ... 79
Rosette disease of Lilium... ... ... 82, 83
Ward's, Mr. F. Kingdon, tenth expedition in Asia 80, 81

COLOURED SUPPLEMENT PLATE.

Venidium fastuosum.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39·7°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, January 30, 10 a.m. Bar. 30·2. Temp. 48°. Weather, Wet.

The Photosynthetic Activities of Green Plants.

As everyone knows, the green plant carries out with monotonous and effortless ease its daily task of supplying the world with sugars and other substances without which life on this planet would cease. The manufacturing activity of the green plant sustains the world. Although many have tried to discover the secret possessed by the green plant, none, so far, has been successful. Needless to say, however, the modern chemist, who has performed so many wonders in the way of synthesis, is not going to submit for ever to the reproach that " the veriest weed beside the brook " is his technical superior. Indeed, the chemist has already made some progress in his attempt to discover the processes whereby the green plant monopolises the trade of universal provider of the food. It is, of course, well known that the raw materials from which sugars are made by the green plant are carbon dioxide and water, and that the manufacture goes on only when the sun shines—hence the term photosynthesis—and it is also known that the synthesis occurs only in the living cells which contain chlorophyll — the green colouring matter of plants. The efficiency of the green plant in utilising radiant energy for this process is also disconcerting to the chemist, for the amount of energy contained in the light absorbed by the green plant is not enough for the photosynthetic work which the plant indubitably does. The green plant ought to use other light, for example, ultra-violet, which would give it all the energy necessary for photosynthesis; but the fact remains that it gets on very nicely and produces vast quantities of sugar, even when ultra-violet light is absent, provided, of course, that the plant receives ordinary sunlight. Professor E. C. C. Baly and his colleagues at Liverpool University have been for some years engaged in the task of surprising the photosynthetic secret which the green plant holds, and it now looks as though they are on the verge of success.* They have shown, for example, that when a stream of carbon dioxide passes through water irradiated by light from a quartz mercury lamp, carbohydrates (*e.g.*, sugars) are produced, which disappear quickly when the light is shut off; in other words, the reaction :—

$$\begin{array}{cc} \text{water} & \text{sugar} \\ + & + \\ \text{carbon dioxide} & \text{oxygen} \end{array}$$

is a reversible one. Professor Baly's next problem was how to make this reaction keep on going one way, namely, in the direction of the production of sugar. This he succeeded in doing to a limited extent by embodying a substance (ferrous bicarbonate) which can absorb oxygen. When the experiment was performed in the presence of this substance, the solution which remained was proved to contain sugar. Now, in the green plant one condition for the photosynthesis of sugar is that the granular chloroplasts which contain the green pigment are so minute and so numerous as to provide a vast extent of surface. It has been estimated, for example, that the area of the surface of the chlorophyll grains of a single leaf of a green plant is equal to that of a tennis court. Acting on this and other information, Professor Baly and his colleagues repeated their experiments, but used a finely divided material, aluminium powder, suspended in the water through which carbon dioxide irradiated by ultra-violet light was passed. By this method, a larger amount of carbohydrate was obtained. The experiment, moreover, led to the conclusion that the photosynthetic reaction takes place at the surface of the chlorophyll grains, which conclusion had already been reached by plant physiologists. What now, it may be asked, will happen, when, instead of ultra-violet light, ordinary visible light is used, and if at the same time the solution is coloured green? Experiment supplies the answer. The illuminated water was coloured by a suspension of nickel carbonate, a stream of carbon dioxide was passed through it and yielded carbohydrate. Greenness, however, seems not to be necessary; a pink material, *e.g.*, cobalt carbonate, will do as well; so that Falstaff, had evolution so willed it, might have babbled not of green but of pink fields. The conclusions to which these experiments point are that the energy for the photosynthetic process is supplied in part only by sunlight, the rest being surface energy provided by the surface of the innumerable and minute chloroplasts. According to Professor Baly, the amount of carbohydrate synthesised by a given area of leaf is about as much as that produced artificially in vessels in the laboratory. That being the case, we may look forward presently to experiments which lead to the production of sugar on a considerable scale, and perhaps beyond that time to a remote future when the green plant will cease to count in the feeding of the world; if so, then horticulture, which is surely an older science, will live when its younger sister agriculture is no more.

Our Coloured Supplement Plate.—Venidium fastuosum is the subject of the Coloured Supplement Plate presented with the present issue; reference is made to this species by Mr. T. Hay, on p. 76.

The President of the Royal Horticultural Society.—The nomination of a successor to Lord Lambourne, as President of the Royal Horticultural Society, is a matter that has greatly exercised the minds of the members of Council for several weeks past. The subject has also been discussed freely by those Fellows who regularly attend the Committee meetings and exhibitions at Vincent Square, and among them there is a hope that some one of outstanding personality will be chosen; one who has strong horticultural sympathies and inclinations, who is *persona grata* in what is known as " high Society," and who is able and willing to give ample time to the guidance of the affairs of this great Society. His position and qualities must be above the average if the new President is to receive the whole-hearted support of that considerable body of members who now take a keen and critical interest in the work of the Society. All Fellows will appreciate the difficulties the Council must surmount in their efforts to place before the Fellows a nomination that will meet with general approval—a figurehead President will not be approved as a successor in that long line of notable men who have filled the Presidential chair—Lord Lambourne, Sir Trevor Lawrence, Lord Aberdare, the Duke of Devonshire, the Prince Consort, Thomas Andrew Knight and the Earl of Dartmouth.

—— Since the foregoing was written, and just as we were going to press, we received the following note from Mr. F. R. Durham, Secretary of the Royal Horticultural Society :—" I am directed to inform you that the Council of the Royal Horticultural Society, at their meeting on January 29, elected Mr. G. W. E. Loder President of the Royal Horticultural Society."

A Statue for Kew.—The Royal Academy of Arts, through the Leighton Fund, has presented to Kew the statue of " A Sower," by the late Sir Hamo Thornycroft, R.A. It was shown at the International Exhibition of Garden Design organised by the Royal Horticultural Society last October. The statue was originally made of plaster, but the Royal Academy has had it cast in bronze. It was placed in position on January 23, on a pedestal, also presented by the Royal Academy, and designed by Sir Edwin Lutyens, R.A., and Mr. A. Drury, R.A. The site selected is at the end of the Broad Walk, near Kew Palace, and not far from the main gate.

A Subterranean Orchid.—Very great interest was shown by the Fellows of the Linnean Society in a remarkable West Australian subterranean Orchid exhibited by Dr. A. B. Rendle. This Orchid has recently been described by Dr. R. S. Rogers in a communication to the Royal Society of Western Australia. The first specimen was turned up by the plough of an observant farmer in Western Australia, and sent to the West Australia Agricultural Department; a notice in the press produced specimens from two other localities. Dr. Rogers sent photographs and a short account of the plant, which he felt sure he would consent to being brought before the Linnean Society. The plant consists of an underground rootless rhizome, which is " in symbiotic relationship with a fungus which closely invests the decayed roots of

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* " Photosynthesis," by Professor E. C. C. Baly. *Proceedings of the Royal Institute of Great Britain.* Vol. XXVIII, No. 122, Oct. 1928

Melaleuca uncinata, R.Br." It lives about a foot below the surface of the ground. The figures showed short rhizomes with a terminal bud and slender lateral branches covered with scale-leaves. The flowers are borne in a dense head surrounded by an involucre of bracts terminating a slender scape, which grows from the rhizome apparently towards the surface of the soil. The inflorescence, which suggests the capitulum of a Composite, reaches about three inches across. The relatively large bracts surround numerous small flowers. The plant " when fresh is colourless," but " the capitulum acquires purplish-coloured tints on exposure to light." Dr. Rogers wrote :—" The affinities of the plant are, of course, with the Gastrodinae, especially as regards its vegetative parts, but I feel that its inflorescence and certain other characters are too extraordinary to include it in the sub-tribe without unduly extending its limits. I have therefore thought it better to accommodate it in a new sub-tribe, which should be placed next to Gastrodinae." Mr. H. N. Ridley compared this Orchid to Gastrodia malayana, and suggested that the plant must at times come to the surface to be fertilised and to disperse its seeds, and that the coloration seemed to confirm this. Lt.-Col. J. H. Tull Walsh considered that a flower which only just emerged from the ground might easily have escaped observation. Mr. J. Ramsbottom pointed out the similarity of the subterranean Orchid to the saprophytic prothalli of Lycopodium; and suggested that subterranean plants are invariably associated with fungi, and that probably all plant saprophytes were symbiotic. Commenting on the similarities between the Australian Orchid and the Japanese Gastrodia elata, of which lantern slides had been shown, he stated that the fungus concerned in the second, Armillaria mellea, was well-known for its destructive parasitism, being the most dangerous parasite in European forests. When it attacked the Potato tuber it reduced it to a mash in a day or two, but when it attacked a similar-looking Gastrodia tuber, an association was set up without which the Orchid was unable to flower. Dr. G. P. Bidder pointed out that in ordinary English farming the plough would not uncover a plant the top of which was a foot below the surface.

Royal Gardeners' Orphan Fund.—Mr. Samuel Wallrock, The Manor House, Stanmore, Middlesex, has promised to preside at the next Annual Festival Dinner of the Royal Gardeners' Orphan Fund, which will be held at the Savoy Hotel, Strand, London, on Wednesday, May 15, next.

Darnaway Forest.—Members of the Royal Arboricultural Society of England, who included in their itinerary a visit to the great Darnaway Forest during their excursion to Scotland last summer, will be interested to learn that the Earl of Moray, proprietor of Darnaway, has written a volume for private circulation, which gives a fine account of the history of the forest, one of the finest in the north of Scotland, or, indeed, in the British Isles.

Appointment at Vienna University.—Professor Dr. Gustav Klein, formerly first Assistant at the Institute of Plant Physiology of the Vienna University, has been appointed Head of the Institute in succession to Hofrat Molisch. Professor Klein, who is a native of Vienna, is only thirty-six years of age, but has already made a name as a chemist and physiologist and by his researches into the effects of fertilisers and of artificial light on the growth of plants.

Aberdeen's New Glasshouses.—The new glasshouses in the Duthie Public Park, Aberdeen, which have been under construction during the past few months, are now reaching completion. The removal of the contents of the old houses to the new quarters is now engaging the attention of the park staff. Erected at a cost of several thousand pounds, these new and up-to-date houses should, needless to say, prove a great help and convenience to Mr. W. B. Clark and his staff in the administration of Aberdeen's horticultural affairs. Mr. W. B. Clark has, by-the-way, been appointed a Vice-President of the Scottish Branch of the Parks and Botanic Gardens Superintendents' Association; the appointment is a popular one. The Scottish membership is twenty-seven, comprising the élite of Scottish public parks superintendents.

Mr. Henry H. Cook.—After serving his apprenticeship under his father, who was then gardener to Sir Francis Wise Low at Kilshane, Tipperary, Mr. H. H. Cook went to Dalkeith as journeyman under the late Mr. J. Whytock, and later became indoor foreman and decorator at Alloa House, Alloa, the residence of the Countess of Mar and Kellie. The experience thus gained fitted him for the post of general foreman at St. Anne's, Dublin, the residence of Lord Ardilaun, under Mr. Andrew Campbell. Here he remained for nearly two years before becoming gardener to Lt.-Col. Sir Hutcheson Poe, and carried out the reconstruction of the gardens and pleasure grounds in accordance with the designs of Sir Edward Lutyens. Altogether, he filled this post for five-and-a-half years. Mr. Cook conceived the idea of entering public service, and to that end secured an appointment under Mr. McHattie, at Edinburgh, where he had charge of the famous Princes Street Gardens. However, a year later, he became gardener at Drummond Castle, where he remained until the effects of the war necessitated a reduction of staff. In 1919, Mr. Cook was appointed lecturer and practical instructor in horticulture at the Reading University, a position he still holds. Mr. Cook is now contributing regular notes in our Week's Work columns, but he has written much on horticultural subjects for various journals. He has taken considerable interest in the flourishing Reading Gardeners' Mutual Improvement Association, and was its Chairman in 1922. He is one of several brothers who have each made a name in horticulture, *i.e.*, Mr. C. H. Cook, at Windsor, and Mr. T. H. Cook, at Sandringham.

MR. HENRY H. COOK.

January's Weather.—It seems that the month just ended has been the most persistently cold January for thirty-four years. During other winters lower temperatures have been recorded, but throughout January the temperature has been consistently low over practically the whole of the country. In some districts of the midlands and the east of England the thermometer, at the time of going to press, had not risen above 43°, while in the Metropolitan area the highest readings were 46° at Greenwich, and 45° at Kew and Hampstead. *The Observer* of last Sunday gave some interesting comparisons, and stated that observations over the last eighty-eight years at the Royal Observatory show that the only other January months during that period which had very low temperatures were those of 1842, with a maximum of 44°; and of 1881, with 43°. In other years of the period the January readings always showed over 50°, a temperature which was exceeded sixteen times in January of 1916, and fifteen times in 1917. Older records show that in 1814, when the river Thames was frozen completely from London Bridge to Blackfriars, the January mean temperature was 27°; the maximum temperature during the first twenty-six days was 36°, although three days later it was comparatively high at 41°. Besides the persistent cold, the month now ended has been noteworthy for its lack of sunshine, high barometric readings, exceptionally small rainfall and the prevalence of winds from between the north and the east.

Potato Drying by Sugar Beet Plant.—The Peterborough Sugar Beet Factory recently carried out an experiment of drying sliced Potatos as food for farm stock. It had been suggested before that the Sugar Beet factories might well consider the utilisation of their drying machinery during the time that it is not at work on Sugar Beet, for the treatment of other crops. The experiment appears to have been a success, although it is too early yet to say much about it, except that the best results appear to have been obtained from drying a mixture of Sugar Beet pulp and Potatos. Here, at any rate, is a promising additional cattle foodstuff in years of Potato plenty.

Bradgate Park acquired for the Nation.—We learn that Bradgate Park, the historic home of Lady Jane Grey, situated five miles from Leicester and covering an area of eight-hundred-and-twenty-eight acres, has been acquired for the use of the public for ever, by the County and City of Leicester, through the generosity of Mr. Charles Bennion, of Thurnby Grange, Leicester.

A Press Guide for Auctioneers.—We have received a copy of *The Auctioneers' Press Guide* (5, Clement's Inn, London, W.C.2), which is published this year for the fifth time. This useful little publication has found its way into the offices of most country estate agents and bailiffs, and is well-established in favour with those who have learnt to depend upon it for information on rates of advertisements. Where enquiries by post mean a delay of at least two days and the expenditure of much time and many postage stamps, its modest price of 2s. seems small indeed.

Blackleg of Potatos.—In a communication issued by the Department of Agriculture for Scotland, it is stated that the Potato disease known as " Blackleg," has been unusually prevalent during the past season. Symptoms of the disease are the blackening and rotting of the stems at the base, with a consequent wilting of the foliage, and a serious loss of crop. The disease may be reproduced by planting tubers from diseased plants, but its development depends on the character of the soil and season, being most pronounced under wet conditions. An important factor, however, in the increased prevalence of the disease seems to be the use of cut seed sets, and it is strongly recommended that sets should not be cut for planting on farms where it is known that the Blackleg is likely to occur.

German Nursery Employee's Long Service.—Otto Frenzel, a responsible employee of the firm of F. C. Heinemann, nurserymen in Erfurt, has just celebrated his sixtieth year in the service of the firm, which he entered in 1869, at the age of thirteen. He has known three generations of his employers, and enjoys, for one of his advanced age, very good health.

Sweet Pea Annual.—Ever since its earliest years, the National Sweet Pea Society's annual publication, *The Sweet Pea Annual*, has been looked forward to with great interest by members. As in the case of so many other Societies, the war period adversely affected membership, and the Committee had to be content to do what it could rather than what it would. Now, however, the Society is enjoying better times, and a membership of about seven hundred, in addition to about one-hundred-and-thirty societies affiliated to it. Moreover, the accounts for 1928 show a balance of £152, and the balance sheet shows a surplus of assets over liabilities to the amount of £427. Considering these matters, and remembering the immense popularity of the Sweet Pea, it would appear that the time has come when the Sweet Pea Society should produce an *Annual* more in keeping with its national standing and the fact that it has the second largest membership among our floricultural societies. The present issue, with its frontispiece portrait of Mr. Harold Beale—the President—is interesting, but suggests that the General Committee has imposed somewhat severe restrictions upon the Editor and the Publications Committee. Mr. Burt's account of the conduct of the Society's Novelty Trial at Coggeshall is unusually useful, and we believe nothing of the kind has been published hitherto. Mr. T. A. Weston, who now resides in the U.S.A., retains his old-time enthusiasm for Sweet Peas, and writes entertainingly about the new multi-flowered strain, of which an illustrated account appeared in *The Gardeners' Chronicle* of August 8, 1928, under the title of "Multi-peduncled Sweet Peas." It has been acknowledged that the essay competition of 1928 was not a success; nevertheless, the successful competitors put forward several interesting suggestions for the further popularity of the Sweet Pea. The report of the useful work of the Floral Committee, the annual report and accounts, and the lists of members and affiliated societies are included, and occupy considerable space. Mr. Burt's audit of the exhibitions in 1928 suggests that efforts to reduce the number of Sweet Pea varieties have not been very effectual, seeing that no fewer than one-hundred-and-twenty varieties were exhibited at Bournemouth in July, and ninety-three at Southport, in August. Fourteen illustrations adorn the text. To non-members, the price of the Sweet Pea Annual is 3s., post free, and copies may be obtained from the Secretary, Mr. A. C. Bartlett, 19, Bedford Chambers, Covent Garden, London, W.C.2.

Legacies to Gardeners.—The late Mr. C. C. Cowlin, J.P., of St. George's Hill, Easton-in-Gordano, Somerset, who died on December 1, 1928, left £50 to his gardener, Mr. W. Pearce, if still in his employ.—The late Mr. Arthur Henry Foster, of Green Lane, Moseley, Birmingham, who died on November 14, 1928, left £1,000 and an annuity of £52 to his head gardener, Mr. Thomas Perry, for long and faithful service.

Scottish Potato Trials.—The Department of Agriculture for Scotland announces that it is now making arrangements for the continuance, during the coming season, of the trials conducted by it for the testing of new varieties of Potatos for immunity from Wart disease. Growers and merchants who have stocks of new varieties which they desire to have tested should forward samples by post to the Director of the Seed-testing and Plant Registration Station, East Craigs, Corstorphine, Edinburgh, to arrive not later than March 18. A note of the name and reference number should be enclosed with each sample. Subsidiary to the main trials, facilities are provided by the department for testing single tubers of seedlings. This test, which is a one-season test only, is designed to enable Potato breeders to discard, at an early stage, varieties which are susceptible to Wart disease. The test is limited to seedlings in the first or second year of their existence from true seed.

Appointments for the Ensuing Week.—MONDAY, FEBRUARY 4: East Anglian Institute of Agriculture lecture; National Chrysanthemum Society's annual meeting. TUESDAY, FEBRUARY 5: Royal Caledonian Horticultural Society's meeting. WEDNESDAY, FEBRUARY 6: National Carnation and Picotee Society's meeting; Wimbledon and District Gardeners' Mutual Improvement Society's meeting; Rotherham and District Horticultural and Chrysanthemum Society's meeting; Gainsborough Allotment Holders' Association's meeting. THURSDAY, FEBRUARY 7: Bideford and District Horticultural Society's meeting. FRIDAY, FEBRUARY 8: Royal Horticultural and Arboricultural Society of Ireland's meeting. SATURDAY, FEBRUARY 9: Leeds Paxton Society's meeting and lecture.

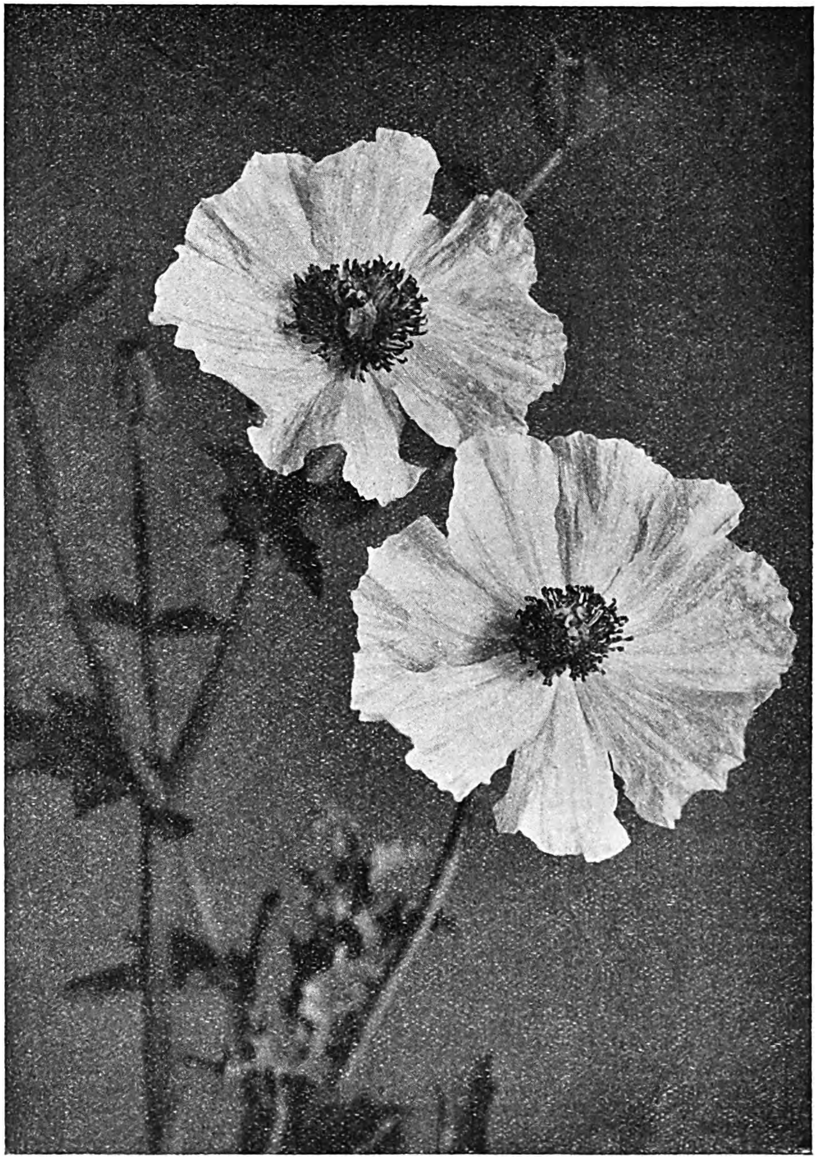

FIG. 36.—ARGEMONE GRANDIFLORA.
(see p. 77.)

"Gardeners' Chronicle" Seventy-five Years Ago.—*Horticultural Society's Garden, Turnham Green.*—In the American garden, the Sikkim Rhododendrons, Edgeworthi, Dalhousie and glaucum, have all been killed, while ciliatum and the large variety of it called alpinum, have stood well, not a leaf being browned, and they are at present well set with flower-buds. The long, hard leaves of the Pampas Grass have lost their colour, and look bleached by the frost. The Californian evergreen Cherry is scarcely at all touched; and the same may be said of Ilex latifolia, which has stood well. The Yucca-like Dracaena indivisa has lost its top, the latter, so far as the leaves were young and tender, having melted, as it were, away by the frost. Quercus Cooki, Garrya macrophylla, and the Chinese Privet, have all had their leaves browned, while the Chusan Palm has escaped uninjured. The beautiful evergreen Californian Gale (Myrica californica) has proved itself to be perfectly hardy, not a leaf on it being browned; Escallonia macrantha has been a good deal injured. On the conservatory wall, Acacia melanoxylon has been killed nearly down to the ground, various Ceanothuses have had their leaves browned, and some other things have been more or less hurt; but upon the whole, less mischief has been done here than might have been expected. Jasminum nudiflorum is now in full blossom on this wall, its bright yellow flowers having a very cheerful effect. The different kinds of Chimonanthus are also in flower at present, and are great favourites, on account of their delicious fragrance. In the large conservatory, Acacia Riceana, quite a tree in size, is now coming beautifully into bloom, as are also the Camellias, more especially the large-flowered sort called elegans, which is just beginning to open multitudes of showy blossoms. The Lucilia gratissima has been flowering finely, but its beauty is now nearly over. An early pink Chinese Azalea is at present in full bloom and that without any forcing. *Gard. Chron., February* 4, 1854.

Publications Received.—*The Trees of New Zealand*, by L. Cockayne, Ph.D., F.R.S., and E. Phillips Turner, F.R.G.S. The New Zealand State Forest Service, Wellington; price 4s.—*The Plant Life of the Balkan Peninsula*, a Phytogeographical Study, by W. B. Turrill, M.Sc. The Clarendon Press, Oxford; price 30s.—*Smith's Advertising Handbook.* Smith's Advertising Agency, Ltd., London; price £1 1s. 0d.—*Annalen des Naturhistorischen Museums in Wien*, by Dr. Karl Keissler, 1928.—*Les Plantes Alimentaires chez tous les Peuples*, Vol. II, Phanérogames Fruitières, by D. Bois, Paris.—*The British Journal Photographic Almanac*, 1929, ed. by G. E. Brown. Messrs. Henry Greenwood and Co., Ltd., 24, Wellington Street, W.C.2; price 2s. (paper), 3s. (cloth).—*Die Praxis des Baumschulbetriebes*, by Paul Rache. Berlin, 1929; price Rm. 25.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Platyclinis glumacea.—Plants of this easily-grown and fragrant Orchid, which have been resting in the cool house, are now commencing to grow, and the flower spikes will soon be seen in the young growths. The plants should be removed to a warmer temperature and will require more water at the roots as the growths and flower spikes develop. As the flowers expand they will keep perfect for a longer period in cooler and drier conditions, and so soon as they have flowered, they should be removed and any necessary repotting done. Use well-drained receptacles for this purpose and a compost consisting of three-parts Osmunda and A.1. fibres, one part Sphagnum-moss, and a few crushed crocks. The plants thrive well at the warm end of the intermediate house, and should be sprayed lightly, especially on the undersides of the leaves, during warm weather; this should keep red spider in check. Water should be afforded sparingly after root disturbance, until the new roots are well-established in the fresh compost, when copious supplies will be needed each time the compost becomes fairly dry, until growth is complete, when drier and cooler conditions may be afforded to give the plants a partial rest. The summer-flowering species, P. filiformis and P. latifolia, and the autumn-flowering P. Cobbiana, are still resting under cool conditions, and only require sufficient water to keep the plants in a normal state; when growth commences they should be given similar cultural treatment as advised for P. glumacea.

Sophronitis grandiflora.—Where a quantity of these dwarf-growing, brilliantly-coloured Orchids are grown, a succession of scarlet flowers may be had for several months. Some of the earliest plants are now passing out of flower and these will require attention to assist the partially developed bulbs to reach maturity, growth being slow at this season. They require all the light available, and may be grown suspended in a house with an intermediate temperature, removing them to a cool house when growth is complete. While they are growing, care is needed to prevent moisture collecting in the young growths, as decay quickly sets in. The roots should not be allowed to remain dry for long periods at any stage, as the small bulbs soon shrivel. Any fresh rooting material should be afforded as new roots develop from the young pseudo-bulbs.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Pot Fruit Trees.—Peaches and Nectarines are, perhaps, grown most extensively in pots, as with a few of the earliest varieties of these trees started in December, one may defer closing the first Peach house until the turn of the year. All the stone fruits do well in pots, when judiciously managed, under glass. Choice Pears and the finest varieties of Plums and Cherries may be induced to yield ripe fruits long before fruits of the same varieties may be obtained from plants against walls. The chief requirements for their successful culture are a light, well-ventilated house, with at least one four-inch pipe running around the interior, and healthy trees, thoroughly established before they are taken in for the mildest forcing. In the selection of trees, those with stout, but not over strong, short-jointed shoots, with well-balanced heads, should be chosen, in pots nine to twelve inches in diameter. The pyramid form is most in favour, as it exposes the greatest external area to the sun and light, an important matter when rich colouring and early maturing are desired. Much depends, however, on the height and aspect of the structure. None but the very best varieties should be grown under glass; good sorts may be duplicated to any extent until the allotted space is filled up. Pears, Plums, Apples and Cherries have been most successfully forced for numbers of years, and few fruit trees give better returns or more pleasure when in flower and fruit. Success in forcing them depends on the avoidance of subjecting them to a high temperature or close atmosphere when the weather is fine; the temperature may fall below 40° when the weather conditions are very severe, without harm to the trees. All that is needed is a fresh, warm, airy atmosphere, the covering of glass alone protects their flowers from frost, while fresh air admitted freely ensures crops of fruits superior in every way to those grown outside. Pears under glass produce fruits of enormous size; gardeners in the north of England and Scotland plant and train cordon Pear trees under glass and obtain exceptionally fine fruits by feeding them liberally and ventilating the houses freely. The above remarks also apply to the best varieties of Apples. Cherries are excellent for growing under glass, but they should not be forced too quickly into growth; it is better to wait until more sun-heat is available. When the buds begin to swell, a mean temperature of from 40° to 45° at night and 50° to 55° by day should suit them; admit fresh air and maintain atmospheric moisture in proportion to external conditions. Green and black aphis generally attack Cherries no matter how carefully the trees may have been cleaned, and two or three mild fumigations should always precede the opening of the first flowers. When the trees come into flower, a fairly dry atmosphere, with plenty of fresh air, and a temperature of 65° secured with the aid of the sun, should ensure a good set of fruits.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Liliums.—There is no class of bulbous plants that gives more pleasure than that of Lilies. Many of the hardier sorts are excellent for grouping in the herbaceous border, where they may be left undisturbed for years if given a annual top-dressing of well-decayed manure and leaf-soil. Where soils are of a medium texture and naturally well-drained, the special requirements of the different kinds may be afforded easily when planting. Light soils will be benefited by an addition of moderately heavy loam, and to heavy soils the admixture of sharp sand or grit and old potting soil will be an advantage. Manure should never be dug in just before planting, but Liliums respond freely to annual top-dressings after they are established. They prefer partial shade, but not a position which is densely shaded by trees. A position where they are sheltered from the north and east by shrubs, open, yet screened from the heat of the mid-day sun, will suit them admirably. Such positions may usually be found at the edges of beds or borders containing Rhododendrons or other shrubs. As these beds have usually been prepared well for the shrubs, they form ideal positions for many of the stronger-growing Liliums, for the foliage of the shrubs gives the necessary protection to the young, tender growths in spring and later shades the bases of their stems from the hot rays of the sun. Whatever the state of the soil, it will be found advisable, when planting, to place a few handfuls of sharp sand under and around the bulbs to preserve them from excessive moisture during the winter. Heavy importations of Lily bulbs take place annually, particularly of L. auratum, from Japan; these are now available, and the necessary stock of bulbs should be secured so soon as possible. As bulbs of Lilies are composed of fleshy scales which soon wither and dry up if left exposed for any length of time, it is necessary to secure and plant or pot them with as little delay as possible. When choosing bulbs for planting in the open, it is unwise to select the largest; medium or small-sized bulbs usually give the most satisfactory results. If the smallest bulbs are planted it is deemed advisable not to allow them to flower the first season; this ensures the building up of strong bulbs for the following season. Where it is intended to make use of Liliums as bedding subjects in the flower garden during the summer, the bulbs should be potted up so soon as received and stood in the open, covering the pots with Cocoanut fibre or half-decayed leaves. When rooted and started into growth they may be grown on under glass if required for an early display. A good many sorts are available at this date; others should have been planted during last autumn. Chief among those that may be procured now is Lilium auratum, good forms of which have flowers ten inches to twelve inches across. The variety platyphyllum is a robust grower and gives better results in many places than does the type. L. a. rubro-vittatum, which has a crimson band on the petals and dark green foliage, is also a strong grower. L. Henryi should be included in every herbaceous border of any size; it is a tall and vigorous grower, and when established, produces its orange-yellow flowers with the greatest freedom. L. speciosum Kraetzeri, L. s. Melpomene, L. s. rubrum and L. s. album may all be employed with advantage either in the shrubbery, the herbaceous border, or for summer bedding. The Tiger Lily needs no recommendation as a useful species, with orange-scarlet blooms, for providing a display in the late summer. The variety known as L. t. splendens is much finer than the common form, and should be grown in preference to it.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hatfield, Hertfordshire.

Cleansing Plant Houses.—The present time is the most favourable for the overhauling of plant houses. The structures should be thoroughly cleansed, and all the walls should receive a coating of lime. All plants, whether growing in pots or borders, should also be cleansed. Climbing plants should be pruned or thinned as their requirements demand, and the shoots tied neatly to the trellises; those growing in borders should receive a top-dressing of a mixture of loam, peat, leaf-mould, charcoal, and a good sprinkling of coarse sand.

Gloxinias.—A batch of Gloxinias may now be started into growth. Place the tubers in boxes containing fine leaf-mould and silver sand, in a light position and a warm, moist atmosphere. So soon as growth commences, the tubers may be potted into the pots in which they are to flower, using for this purpose, a compost of fibrous loam, peat, leaf-mould, crushed charcoal and coarse sand. If young plants are to be raised this season, seeds should be sown without delay in well-drained pots or seed-pans. The surface of the compost should be made perfectly level and firm by pressing it lightly, and the seeds may be just covered with fine, sandy soil, and watered with a very fine-rosed can. Shade the receptacles from bright sunshine and cover them with a piece of glass, tilted back about half-an-inch, until germination takes place. Never let the compost become dry, and when the seedlings appear, gradually expose them to the light and air, to prevent them becoming drawn or weak. So soon as they may be handled with safety, prick them off into shallow boxes, and when they have made sufficient growth, place them singly in small pots, moving them later before they become pot-bound into the receptacles in which they are to flower.

Begonias.—Begonia knowsleyana and Begonia kewensis are two very useful Begonias, as they flower freely during the winter months. They require to be grown in an intermediate house until the young plants become established in large sixty-sized pots, but during the summer months they may receive their final potting and be grown in frames, provided they are taken into a house having a temperature about 55° to 60° on the approach of cold weather. These two Begonias may be propagated freely from cuttings, but the propagator should be sure that the cuttings are free from rust and mite. Cleanliness is an important factor in the successful cultivation of Begonias.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Lecturer in Horticulture, Reading University.

Raspberries.—If we consider the conditions which prevail where this useful fruit is found in a wild state, we find that the soil is deep, rich, and plentifully supplied with moisture, but not water-logged. It is to be found in partial shade, but the finest flavoured fruits are obtained when the fruits are grown in full sun. Where the ground has been prepared by trenching and thoroughly enriched with organic manure, no time should now be lost in getting the young plants into their permanent positions. Raspberries may be raised easily from seeds, and the seedlings should bear fruits in the third or fourth year. The general method of increase, however, is from suckers, which are produced in abundance on most varieties. Those that arise at a distance of a foot to eighteen inches from the parent plant are generally provided with many more fibrous roots than are those which arise close to the canes. These young suckers should be lifted carefully and planted in their permanent quarters, to bear fruits the second summer. Raspberry canes should have some sort of support, and the system of planting should be arranged according to the form of support to be adopted. In every case the young canes should be cut down, almost to the ground level, immediately after planting. The simplest method is to plant them two feet apart in rows five to six feet from each other. The training, in this instance, consists in bending the canes over right and left, to form a series of arches, which will be found a simple and effective means of support. The second method is to plant them in groups of three, with a strong stake in the centre of each eighteen-inch triangle, to which the canes are produced. These groups should be four feet from centre to centre. The third method, and the one usually employed on commercial plantations, is that known as the espalier fence. This fence consists of strong, terminal posts, with lighter intermediate posts, five feet high, to which three galvanised wires are attached. The young canes are planted eighteen inches apart along this fence, and as the plants develop, the canes are secured to the wires, spacing them out fan-wise three inches apart. The pruning, for the summer-fruiting varieties, consists of cutting out the old canes after the fruits have been gathered, tying in the strongest of the young canes, and removing the weakest. With the autumn-fruiting sorts the pruning consists of cutting back all the growths of the previous season any time during the dormant period. The fruits of these are borne during September and October on the tips of the current season's growths. The types of soil suited to different varieties vary, so a trial is recommended before the extensive planting of any one variety is carried out. On the stiff, clay soil here, we find the varieties Lloyd George, Laxton's Prolific, Baumforth's Seedling and The Devon do best. The Hailsham-berry, Lloyd George, and November Abundance are a few of the best autumn-fruiting varieties.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER, Knowle Gardens, Dunstar, Somerset.

Cucumbers.—If a sufficiently high temperature can be maintained to ensure rapid germination, Cucumber seeds may be sown now. They should be sown singly in small pots filled with good loam. Plunge the pots in a propagating frame with bottom-heat, and when the seedlings are about two inches high, remove them to a shelf near the glass, where they will receive plenty of light. Great care is necessary in watering them during these early stages, for they are very liable to damp off.

Leeks.—Where specimen Leeks are required for early use, or for show purposes, seeds may be sown now in boxes and germinated in heat, the seedlings being grown on under the same treatment as afforded Onions. The seedlings, when large enough, should be pricked off into boxes, which should have a layer of decayed manure placed in the bottom. Plenty of heat and moisture are two conditions necessary to secure good results.

Spinach.—The Spinach bed should now receive an application of soot, which should be dusted between the lines, and the surface of the soil should be stirred, when in suitable condition, with the Dutch hoe.

Seed-sowing.—As time advances, it is important, if large quantities of vegetable seeds are to be sown, to make preparations for this important work in advance. The frames, for instance, if available, should have the seed-beds prepared in them now, so that sowings of early crops may be made. Fresh horse manure should be placed at the bottom and made firm, and on this should be placed at least fifteen inches of soil, which, after being trodden moderately firm should be raked level, the surface being reduced to a fine tilth. Among the subjects which may be sown at the present time in these frames, in drills about nine inches apart, are Carrots, Turnips, Spinach, Lettuces and Radishes, while sowings may also be made of Brussels Sprouts, early Cabbage, Cauliflowers and Savoys, to secure plants for planting out early.

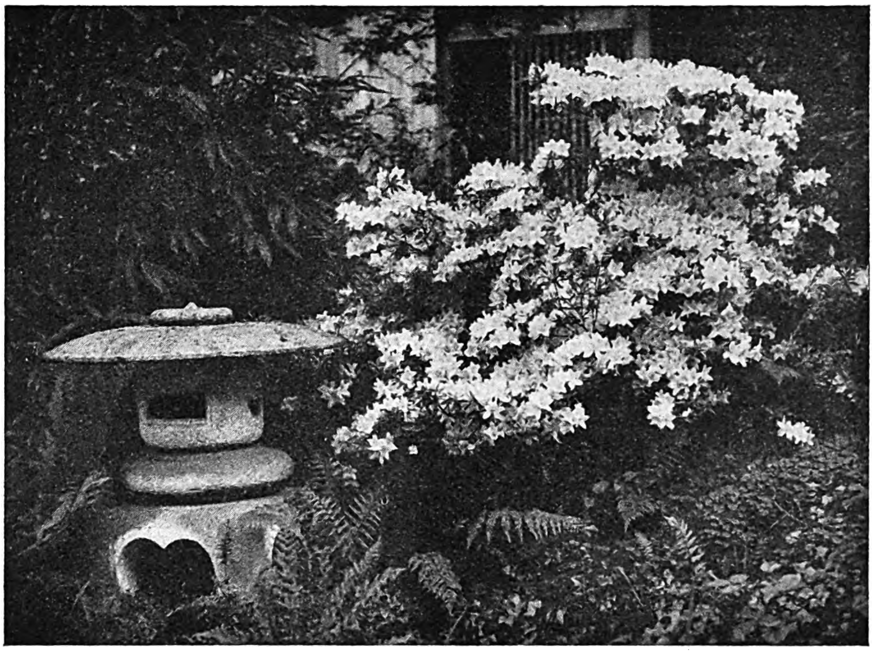

FIG. 37.—A JAPANESE AZALEA IN A HEIDELBERG GARDEN.
(see p. 78.)

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq., Rosemount, Monkton, Ayrshire.

Early Vegetables.—Carrots of the Short Horn type, early Turnips, Radish and Lettuce, may now be sown in frames or pits in seed-beds above a fermenting material. If early Leeks are required, seeds of these may also be sown under glass, in case sowing out-of-doors is delayed owing to wet weather. Seeds of a good early variety of Peas should also be sown now either in pots or boxes. I prefer to sow them in long, trough-shaped boxes, wider at the bottom than at the top, with the bottom held in place by string; this can be removed easily, and the whole contents of the boxes planted without disturbance. The Pea seeds may be started in heat, but so soon as the seedlings appear, remove them to a cold frame and keep them close up to the glass. Where mice are likely to prove troublesome, take steps to keep them at bay, either by wetting the seeds in paraffin oil and rolling them in red lead.

Onions.—On the first favourable day, *i.e.*, when the soil is not sticky, stir the surface of the soil of the intended plot for Onions with a digging fork or cultivator to a depth of two or three inches; this may need to be done more than once before the required tilth is obtained, and is most important, not only for Onions, but for all fine-seeded vegetables to be sown in the open ground.

Jerusalem Artichokes and Shallots.—Both these subjects may be planted whenever the ground is in suitable condition. The sooner they are planted the better, but it is better to wait even for a month if the ground is in a sodden condition. Jerusalem Artichokes should not be grown in rich soil, and should be given plenty of room, about three feet between the rows being sufficient.

Cyclamens.—If these were sown in August or September, the seedlings should now be ready for placing into small pots or boxes. I prefer the latter for this first shift, as a more even condition of moisture can be maintained at the roots. The soil should consist of two parts loam, one part flaky leaf-mould and one part rough sand and lime rubble, passed through a half-inch-mesh sieve, the rough material being used for providing the drainage at the bottom of the boxes. Insert the small corms just level with the surface, and do not pack the soil firmly around them; place them in a house with a temperature of about 60°, spray frequently on bright days, and shade them only from very bright sunshine. Keep them growing steadily, avoiding any checks that may be occasioned by attacks by pests or lack of moisture.

Digging and Trenching.—Take advantage of every suitable opportunity to dig or trench all vacant ground, but nothing is to be gained by working on wet soil if it is of a heavy nature. Many soils are better dug in spring than in autumn; experience will show which is best in each instance. The quarters for winter Broccoli should not be dug or trenched, for if they are planted on loose, open land the growth is too soft to withstand the winter; they do perfectly well on the hardest ground if a little loose soil, such as old potting compost, is put into the holes made for the reception of the plants. Brussels Sprouts also do well under this treatment, and do not become so tall as when planted on freshly dug ground; surface cultivation with the Dutch hoe after planting is all that is necessary until earthing up takes place, when the beds may be dug lightly with a fork to enable this operation to be performed satisfactorily.

FLOWER GARDEN.

ANNUAL FLOWERS.

During the past few years, our great seed houses have done much to stimulate interest in annual flowers, and their superb examples of good cultivation which have graced the Chelsea and other exhibitions have been nothing short of a revelation to many who have hitherto looked askance at annuals and regarded them with feelings of contempt. It is, of course, true that for nearly a century vast quantities of annuals have been sold and used to decorate countless thousands of small gardens, both in town and country, but in our great gardens and our public parks they have been but sparingly used, and more often than not only as stop-gaps.

Now a change is becoming apparent everywhere, and such time-honoured plants as the Fuchsia, Calceolaria, Geranium, etc., are giving way to Salpiglossis, Larkspurs, Nemesias, Clarkias, Viscarias and many other annual plants. For their brief span of life, nature has compensated by giving them a great brilliance and a richness, both in variety and elegance, unsurpassed by those enjoying a longer existence.

Commercially, they are probably of greater importance than our perennials, as seed production is a considerable industry here, on the continent, and in America, and much money, time and labour are devoted to the growing of seeds, and to the raising of new varieties.

All this energy and enterprise, no doubt, meets with its reward in the popularity annuals have obtained everywhere. Constant efforts to produce new colours, forms and types have resulted in improvements in nearly all our best known garden annuals.

Messrs. Sutton and Sons have set the standard of what good cultivation can effect in such simple everyday plants as Salpiglossis, Godetias, Nemesias, Phlox Drummondi, etc. Messrs. Dobbie and Co. have shown the possibilities of Zinnias, Marigolds, etc., while Messrs. James Carter and Co. have displayed Schizanthuses and Clarkias in fine condition, all showing what these plants are capable of in the way of garden decoration. However, we learn but slowly, and it is still true that annuals are often cultivated poorly. Vast quantities of seeds are wasted yearly, and constant reminders are necessary that thin sowing or drastic thinning is the only road to success.

There are certain annuals that are only seen at their best when grown from an autumn sowing. This is now well understood. Among these are included Salpiglossis, Godetias, Phlox Drummondi and Clarkias. The cooler conditions and the slower growth and development seem to suit all those mentioned, and magnificent beds of them are now to be seen annually in our public parks.

More suitable for spring sowing are the Viscarias and Nemesias—two annuals unsurpassed for brilliance, particularly when massed in large beds or borders.

New colours and forms of many of the most popular annuals come to us in battalions in such families as Godetia, Aster, Clarkia, Calliopsis, Eschscholzia, Nemesia, and many others. There is material to suit every taste and for every purpose.

New species and also the re-introduction of old or forgotten ones, reach us much more slowly. Those interested in the geographical distribution of plants know the regions from which they are to be expected. We may expect little of merit from China, that storehouse of fine plants, or from India. Some are hoped for from Morocco, and not a few from the mountains of Mexico, and it may be confidently stated that South Africa will, in the near future, provide us with some wonderful new annuals, surpassing anything yet introduced from that country.

The late and lamented Mr. Dummer, who had travelled widely in Africa, has left it on record that in Namaqualand there awaits anyone who will take the trouble to reap it, a rich harvest of annual plants of the most showy and decorative character, and beyond anything to be found in any other part of the globe. In a letter recently written by one of the most enthusiastic of South African gardeners, the following passage occurs: "If I am again able to visit Namaqualand, I will collect new annuals of the most wonderful brilliance and beauty, and in variety undreamed of."

I am here reminded of the Editor's instructions, which are to the effect that the purpose of these notes is to call attention to the more recent additions to annual flowers, and it will be conceded that in Venidium fastuosum —so finely illustrated in the coloured supplement plate that accompanies this issue—we have a plant of outstanding merit. Its brilliant orange flowers, four inches across—and often more—with shining black centres displayed to perfection in a setting of soft grey, woolly foliage, make this a most desirable addition. It has been decorated with the R.H.S. Award of Merit, and favoured with a place in the *Botanical Magazine*.

An Award of Merit has also been given to Ursinia anthemoides—a lovely orange Composite, the handsome flowers of which are relieved by a crimson zone. This has been much admired and is now obtainable from all seedsmen. Ursinia anthemoides is dwarf in stature, and when well massed makes a most showy bed. It is very variable from seeds, and requires the selecting hand of the seed-grower to fix the best forms. It is certain to become a popular annual when better-known.

The re-introduction of Arctotis breviscapa adds another first-class plant which is suitable for a dry, hot bank, where for months it will show to great effect. A coloured plate of this species was issued with *The Gardeners' Chronicle* for July 7, 1928.

From Utah has come Baileya multiradiata, one of the neatest and most perfectly formed of golden Daisies—a very lovely plant which, unfortunately, refuses to set seeds with us, but these ought to be obtainable from American seedsmen.

Mr. Robinson, gardener at Villa Serana, Vinadel Mar, Chili, has sent seeds of Godetia amoena or a near ally of that species. This was also brought home by Mr. Clarence Elliott, and a most charming plant it is, about two feet in height, producing fine sprays of soft mauve flowers.

While on the subject of Godetias, reference must be made to the three or more new varieties shown in August last by Messrs. Sutton and Sons. They are magnificent additions to this popular and showy family, and those who prefer species to garden forms may be reminded of the charms of Godetia viminea, generally sold under the name G. Lavender, which is, perhaps, the most lovely of all.

The re-introduction of Sabbatia campestris, a plant from the swamps of Florida (see *Gard. Chron.*, Aug. 7, 1926, p. 107, Fig. 56), adds another interesting subject to the annual border. It is somewhat slow and difficult in its early stages. It should be sown early in the year and on no account allowed to become dry. When of sufficient size to plant out, it will suddenly take a spurt and soon form nice, shapely bushes which give a long display of lovely, rose-pink, star-pointed flowers. It will always be a plant requiring care and skill to make it give of its best.

Oenothera trichocalyx is probably a perennial in its native Californian habitat, but with us it is best treated as an annual. Seeds of this plant are now available and it is one of the best Oenotheras yet introduced, with large, pure, white, sweet-scented flowers which remain open all day. It forms a delightful bed, and is also very ornamental as a group in the herbaceous border (see *Gard. Chron.*, Nov. 6, 1926, p.366, fig. 165).

Dimorphotheca pluvialis is an old favourite, but is now quite surpassed by the variety ringens. This is a great improvement on the type and prodigal with its lovely blossoms, which are enhanced by a broad ring of the richest purple. It should be included in every collection of annuals, and it is now easily obtainable.

Having seen the new annual Anchusa Bluebird, I can thoroughly recommend this newcomer, offered this year as a novelty. In the mass, this is a most telling and effective plant, and of a colour all too scarce.

Poppies are among the indispensables, and one comparatively new strain raised, I believe, by Messrs. Stark and Son, and named Ryburgh hybrids, has not received nearly the appreciation it deserves. Shirley Poppies are notoriously difficult to transplant, but this can be done if they are handled when very small, and the weather is just right, but Ryburgh Poppies may be transplanted as easily and as safely as Polyanthuses, and are now much used in our parks. If sown about the end of September and transplanted into a nursery bed, they grow all the winter and may be placed in their flowering quarters in spring. They will produce a brilliant display there for months, and, as they make big clumps, should be planted two feet apart.

Antirrhinums have now reached a stage of perfection and variety that it must be difficult for raisers to find anything to surpass existing sorts. The new variety, C. H. Herbert, raised by Messrs. Simpson and Sons, of Birmingham, is, however, one that immediately arrests attention, being of a rich reddish-orange—a shade quite new in the family. It is a variety of great vigour, carrying massive spikes of flowers, and a striking plant well worth a prominent place in the flower garden.

And lastly, there is a pleasant remembrance of Heliophila linearis, a really good member of a large and rather weedy genus of South African plants. It sends up a single, straight stem, about twenty inches in height, which branches freely, and remains smothered in a mass of lovely Forget-me-not-like flowers for many weeks. It is a Crucifer and, as its name denotes, its leaves are very small and insignificant. This is an annual of great promise, and no doubt will find its way into general cultivation in due course. *T. Hay, Hyde Park.*

INDOOR PLANTS.

LAPAGERIA ROSEA AND ITS VARIETIES.

The Order Liliaceae is particularly rich in plants having flowers of beautiful form, with petals of considerable substance. These characteristics, combined with handsome, evergreen foliage, render the Lapageria one of the most desirable of all climbers. It will grow freely in any ordinary cool greenhouse, even under frosted glass or in semi-shaded corridors, and is so nearly hardy that in the most favoured parts of Great Britain fine specimens may be grown on open walls facing north. Its love of shade from the direct rays of the sun is not surprising, as my son, Mr. H. F. Comber, describes it as rambling over the undergrowth, beneath the shade of tall forest trees in Chili, from whence it was introduced in 1847.

Although well-known, it is only occasionally that a really good specimen of Lapageria is met with. Yet, if certain essentials are provided, viz., good drainage, suitable soil, sufficient shade, and a moist atmosphere, there should be no difficulty in growing it. A plant in good health should be capable of covering wires or trellis twenty feet at least in every direction. The size of the growth determines the number of flowers at its apex, varying from eighteen or more to only two or three on the older and weaker ones. The waxy, pendant flowers appear from September to December, when most other climbers are past their best. The coloured varieties vary from pinkish-red to the richest red imaginable, but the shade can hardly be described as crimson. Lapageria rosea var. alba, the pure white form, and a fit companion for the foregoing, has slightly larger leaves and grows even more freely.

When purchasing stock, avoid stunted plants; a healthy example, however small, is preferable. Repot as often as the roots spread outwards around the ball of soil, twice or three times in a season, using, while the plants are small and often repotted, good, fibrous peat, with a twentieth part of coarse sand. Later, when planted in its permanent pot, tub or border, it is best to add a considerable proportion of light turfy loam and broken charcoal; peat alone is apt to become sour—a sodden, unaerated condition is detrimental to root-action. Provided there is an outlet for water below, twelve inches of broken brick, closely covered with turves, will efficiently drain soil placed above it.

Forty years ago, when specimen plants were in fashion, Lapagerias, grown in pots, were trained out on the greenhouse roof during summer to make their growth. In August they were taken down, and retrained on wire balloons with the flowers disposed at equal distances, for the decoration of the conservatory or exhibition. Nash Court variety was the favoured red; the flowers were rather short in the tube, open at the mouth, and of an exceptionally fine colour. There was at one time a good specimen of this variety at Warnham Court, near Horsham. Possibly, L. rosea var. superba, now considered the finest, is the same thing under another name.

Perhaps the most important item of cultivation is the care of the young basal shoots. Several of these are produced annually, according to the size of the plant. If they do not appear regularly, remove the surface soil until the cause is discovered. Slugs are particularly fond of the young growths, eating out the points, time after time, before they can reach the surface. A covering of sharp sand for these shoots to grow through is the best remedy; fluffy cotton-wool, tied around, will protect them at the surface, and a regular examination with a good lamp and a pair of sharp scissors can be recommended. In the open air powdered alum or or alum in solution may be used with good effect.

Pruning, after flowering is over, consists in removing all old or exhausted stems, and slightly thinning the remainder if necessary. Wires strained about a foot below the glass and the same distance apart, are excellent to train on. Winter training is simply looping the growth to the wires after pruning, four or more growths to each wire. Summer training is a different matter; strong, leading shoots may be easily looped to the wires, but there still remains a crowd of small growths, which soon become matted together if neglected. This can be prevented by giving each shoot something to twine on. Tie tar-string, at intervals of nine feet, transversely across the wires; then twine can then be stretched at three inches apart parallel to the wires. The small growths will require no tying, only guiding once or twice a week in the growing season, to the twine, around which they soon cling. In September, the strings should be cut, and all growth up to eighteen inches allowed to hang downwards. A very fine display of flowers is thus assured.

A neglected plant, on the other hand, soon becomes a mass of tangled shoots, twined around each other, the wires, or any other support within reach.

The writer, as a young foreman, once had to deal with a large specimen in this condition; it had evidently been well cared for a year or so previously, as it covered the roof of a span-roofed greenhouse sixty feet by twenty feet. Working on a scaffold of planks, we attempted to untwine and lay it out—a practical impossibility. We then conceived the idea of coiling all the growths as they were untwisted, foot by foot, and very soon numbers of small coils were hanging from the wires across the end of the house. Their number diminished rather than increased as the work proceeded, for on reaching a fork, the secondary coil was tied safely to the larger one. This method enabled us to extricate twisted stems from the worst entanglement; it also simplified the operation of retraining, and prevented damage to the brittle foliage.

General cultivation is simple; water should be afforded judiciously in winter and freely in summer, damping the floor in warm weather, and syringing the foliage thoroughly as the sun declines. Green fly may be destroyed by fumigation. A small, white scale is sometimes troublesome, but may be eradicated by spraying regularly with nicotine soap from February to May. Mealy bug should be kept at bay by "quarantining" the plants when received, and giving all undesirable "stowaways" a dose of methylated spirit on the point of a camel-hair brush. *J. Comber, Nymans Gardens, Handcross.*

HARDY FLOWER BORDER.

ARGEMONE GRANDIFLORA.

This beautiful Perennial Poppy does not succeed in every garden, although why it fails to do so is difficult to state, as it is a good perennial and would appear to be quite hardy. Like a large number of the members of the Natural Order Papaveraceae, Argemone grandiflora (Fig. 36) is a sun-lover, therefore it should be planted in a warm position in the border, in deep, well-drained soil that is not too rich or heavy in texture. Provided with such conditions it should flourish and prove a handsome feature, for when happy it forms a bushy plant up to three feet in height, attractive both in foliage and blossom. Its sinuate, spiny-toothed, smooth and glaucous leaves are white-veined, while the large flowers, produced in loose panicles during early summer on established plants, are clear white, with a prominent central cluster of golden-yellow stamens.

A. grandiflora, a native of Mexico, from which country it was introduced to English gardens in 1827, is best raised from seeds sown under glass early in the year, or in the open garden during early spring, and plants so raised should flower in the early autumn of the same year. *F.*

INULA ROYLEI.

This, among Inulas, is one of the choicest, and is a valuable plant for the herbaceous border during August and September. It reaches a height of from two feet to three feet, and has large basal leaves. The flowers, of a beautiful golden-yellow colour, are an attractive feature during late summer and early autumn. *F. W. G.*

POLYANTHUS BARROWBY GEM.

The fine new Polyanthus Barrowby Gem which is achieving such popularity as a spring and summer-flowering subject, will probably acquire a reputation for winter-flowering as well, if one may judge from its behaviour this winter. With me it is flowering freely at the present time, and its large, golden flowers are much valued. This winter has not, so far, been favourable for the production of flowers by those plants which frequently give a good deal of winter bloom, although the Primula Juliae hybrids have been doing well, therefore those of P. Barrowby Gem are very welcome *S. Arnott.*

BULB GARDEN.

CROCUS BIFLORUS.

Crocus biflorus has long been grown in English gardens, and is one of the most suitable sorts for planting in large groups for producing bold effects early in the spring. It is sterile, but increases rapidly by offsets, which it produces freely, while it is one of the most adaptable Crocuses, flourishing in any type of soil, provided it is not waterlogged.

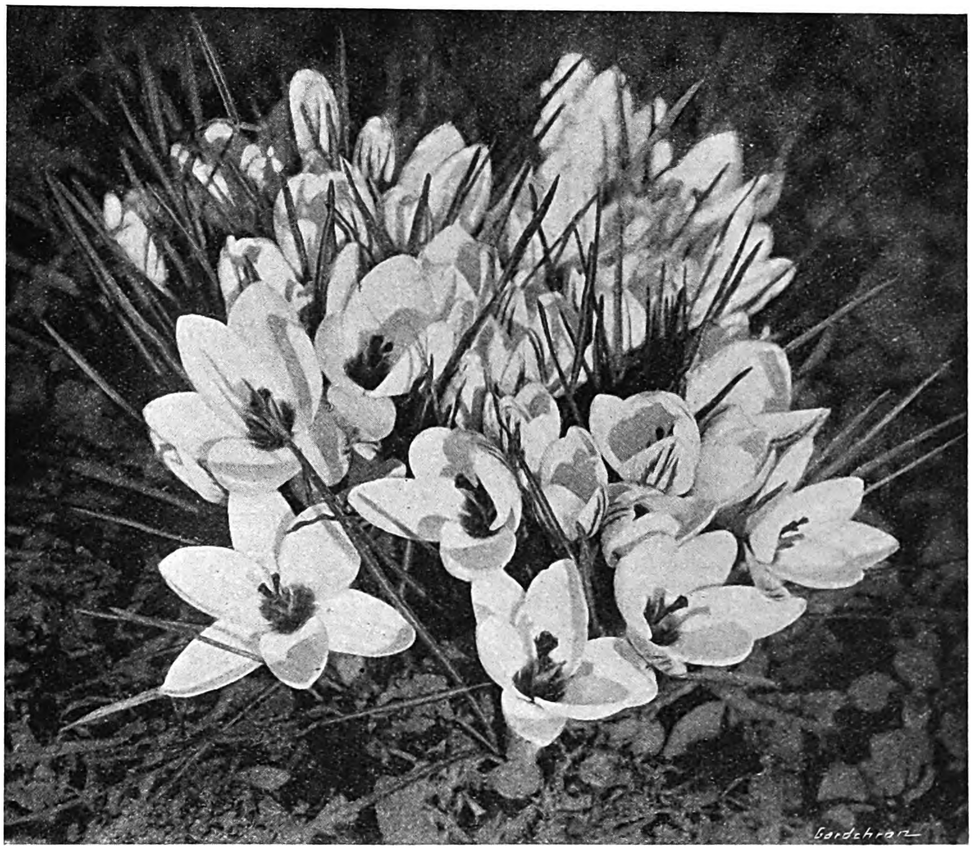

FIG. 38.—CROCUS BIFLORUS.

The type—there are several distinct varieties—may be recognised by its large flowers, the general colour of which is white; the throat is yellow, while the outer sides of the segments are marked and feathered with bluish-purple.

Mr. E. A. Bowles, in his *Handbook of Crocus and Colchicum*, mentions several distinct varieties of C. biflorus. C. b. Parkinsonii is smaller than the type, from which it may also be distinguished by the outsides of the outer segments, being shaded with creamy-buff; the flowers are rounder, pure white within, with a rich orange throat. C. b. argenteus may be distinguished by its narrower segments, which are pale lilac within, while there are only three, instead of five, purple lines on the outer segments. C. b. Weldenii is described as a very attractive form from Dalmatia, ranging in colour from pure white, through forms in which the outer segments are flecked with blue, to those in which the entire outside surface, except for narrower margins of white around the segments, is rich purple.

TREES AND SHRUBS.

A JAPANESE AZALEA.

Mr. ALFRED UNGER, who has travelled extensively in Japan, cultivates many Japanese subjects in his garden at Heidelberg, and has sent us a photograph of a charming scene (Fig. 75, p. 37), wherein a Japanese Azalea figures beside a Japanese stone lantern. Mr. Unger informs us that this Azalea has been in his garden for eighteen years; he considers it belongs to the ledifolia group, but has purple instead of the usual white flowers. It has never received protection, and it flowers profusely each season.

MAGNOLIAS.

THE genus Magnolia, comprising some twenty or more species of mostly deciduous trees and shrubs, is one of the most magnificent groups of spring-flowering subjects. They vary in stature from the fifty or sixty feet, which is often attained by the rapid-growing North American species M. acuminata, to the five or six feet of the slow-growing Japanese species, M. stellata, and give a succession of flowers from March to June. They may be considered of easy cultivation, but should be planted in deep, moderately rich soil, and it is advisable to select positions screened from the early morning sun, particularly for those early-flowering species which blossom before the foliage expands. Most of them are impatient of root disturbance, and extreme care should be exercised in the transplanting of larger specimens. The genus Magnolia has been revised recently, but to avoid confusion, the species given below are under the names in general use.

M. acuminata is a vigorous-growing tree which soon makes a large, spreading head. The flowers are of a greenish-yellow colour, three or four inches in diameter, but are not produced freely on young trees.

M. conspicua is an extremely valuable species from China, and there are a considerable number of good specimens of this fine Magnolia in this country. It is sometimes planted against a wall and trained, but is better grown where it may develop naturally, and frequently makes a shapely tree some thirty feet in height. Its large, pure white, cup-shaped, fragrant flowers are produced in rich profusion in early spring, forming a sheet of white and presenting a most striking and beautiful appearance.

Among hybrids with M. conspicua parentage may be mentioned M. Lennei, a wide, spreading tree with large, richly coloured, rosy-purple flowers, and M. Soulangiana, a popular plant with large, white blooms tinged with purple.

M. glauca is a desirable species and is practically evergreen, at any rate, in the southern counties. A native of North America, it is quite hardy in this country and makes a small tree from fifteen to twenty feet high. It flowers somewhat later than most of the Magnolias, its creamy-white, globular, deliciously fragrant blossoms being frequently produced so late as August and September. M. obovata is a dense-growing, shrubby, Chinese species with large, obovate, deep-green leaves and large, fragrant flowers, heavily flushed with purple. It seldom exceeds five feet in height, but is an attractive shrub.

M. macrophylla is a handsome North American tree with very large leaves and smooth, white bark. It grows to a height of fifty feet in its habitat, but seldom attains more than thirty feet in this country; it is somewhat tender when young, and should be planted in a sheltered position. Its creamy-white flowers are eight or ten inches in diameter and sweetly-scented. M. parviflora is a handsome small tree from Japan. The flowers are almost globular, the pure white petals encircling a central disc of conspicuous, rosy-crimson stamens.

M. stellata is a distinct and charming, but slow-growing, Japanese shrub, and one of the earliest to flower. The pure white, semi-double, fragrant blossoms appear in March, before the leaves expand, and present a sheet of white which becomes slightly tinged with rose as the flowers age. There are several lesser-known species which are attractive, notably M. Dawsoniana, a Chinese species closely allied to M. conspicua; M. Wilsonii, also from China, which has an affinity to M. parviflora, and M. Watsonii, a Japanese small tree with creamy-white flowers possessing crimson anthers.

M. grandiflora, the so-called Laurel Magnolia of the southern United States, is a general favourite, both as an evergreen tree and as a flowering plant. It is generally grown against walls in this country, and usually does best in recesses between bay windows or buttresses on high buildings where good shelter is afforded. It is a very heavy-foliaged tree, and the large branches should be securely attached to the wall, or strong winds may break them off. If the main branches are securely fastened, however, the side growths may be left in a more natural state, supporting only the longer ones by loosely tying them to the main shoots. It is generally considered that this is a slow-growing tree, but if sites are well-prepared and provided with good, rich compost, growth is comparatively rapid after the plants have become established. The flowers of this grand species measure up to one foot in diameter, and are freely borne on old trees, while the bright, glossy leaves are attractive at all seasons. There are several varieties of this species, but few of them are superior to the type. M. g. Exmouth variety is, however, reputed to be hardier. It is rather more compact and erect, and flowers more freely in the young stage. *W. A.*

ERINACEA PUNGENS.

OFTEN called the Hedgehog Plant, owing to its close, compact habit, and long, sharp, silvery-green spines, with which it it densely covered, Erinacea pungens is perfectly hardy in most parts of the country, and is a subject that all who have a rock garden should endeavour to grow. The growth is slow, but in a few years, if left undisturbed, it makes a most attractive cushion on which, during summer, are produced large, Pea-shaped flowers of a charming lavender-blue colour. It roots freely from cuttings inserted during early summer under a bell-glass and kept close and shaded for a time. *F. W. G.*

ALPINE GARDEN.

ACAENA MICROPHYLLA.

A NATIVE of the sub-alpine regions of both islands of New Zealand, in which country it is familiarly known as the Small-leaved Bidi-bidi, this plant is a popular subject for alpine gardens in this country, being the most attractive member of the genus and not so rampant or coarse in growth as some of its congeners. It is often supplied by nurserymen, and sometimes given as synonymous with A. novae-zelandiae, but is quite distinct from that species, and more attractive in its colouring.

It is an extremely useful carpeting plant, clothing the ground with close mats of tiny, pinnate leaves, almost feathery in effect and of bronzy colouring, while in late summer and throughout the autumn the carpets are thickly studded with sessile, round flower-heads, and fruits bristling with bright crimson spines like miniature hedgehogs.

A. microphylla is useful for a variety of purposes. It may be used as a carpet plant to Crocuses and similar subjects, whose flowers may be marred during rainy weather by coming into contact with the soil, or it may be planted in the interstices of stone-flagged walks, while it is excellent for clothing hot, sunny banks.

It is a sun-lover, and is never so happy as when growing in light, poor soil, in a hot, dry position, as under such conditions its rich colouring is brought out and accentuated. A. microphylla is quite hardy and may be thoroughly recommended where plants for such conditions as described above are desired. *Kent.*

AJUGA METALLICA CRISPA.

THE majority of gardeners and plant lovers are familiar with the variegated and purple-leaved forms of the common Bugle, A. reptans, and to a lesser degree with the attractive A. pyramidalis and A. genevensis, but it is seldom that A. metallica crispa is encountered in gardens, and still more rarely is it described in horticultural literature. In the Kew *Hand List of Herbaceous Plants*, a variety of A. reptans is given as metallica, and it is possible that this is the correct name of this subject, although no authority for the name is given, nor any other references for that matter.

It came, in the first instance, from Germany, but when, and by whom it was introduced, I have been unable to discover, yet for all the meagreness of information about it, it might well be employed more extensively on rock gardens, or in any position where prostrate, low-growing carpeting subjects are required.

The striking feature about this Bugle is its foliage, which is quite distinct from that of any of the other members of the family, being very curled and wrinkled, dark and glossy, and with a distinct metallic sheen. It forms an extremely dense mat of foliage, the curling of the leaves accentuating this density. The flowers of A. metallica crispa are typical of the genus, being of a clear, bright blue colour, and produced—not so freely that the effect of the foliage is marred—in short, leafy and close packed spikes. To secure a full effect from the foliage, this subject should be planted in a comparatively sunny and not too moist position, so that the metallic sheen of the foliage may be developed fully. Inclement weather has no effect upon it, and that it will thrive when once planted may be guaranteed, while it may also be used with effect—grown in a small pan—in the furnishing of the alpine house.

OXALIS LOBATA.

ONE of my greatest treasures in the rock garden during the past season was Oxalis lobata, the charming little dwarf species from Chile, although whether it is still alive, or will manage to survive the remainder of the winter, I hardly dare to hope, for it is notoriously a "bad doer" and is not enamoured of our winters, which is understandable when one considers it hails from Chile, and has seemingly pined to return to its native land since its introduction in 1823.

I was fortunate in securing a good specimen last spring—despite the difficulty attached to retaining it alive it is still stocked by one or two of the leading alpine plant nurserymen—and planted it in a gently sloping moraine, surfaced with a good layer of clean granite chips. It was planted clear of any rocks, so that it received all the available sunshine, and rain, but the latter soon drained away. and the "neck" of the plant was not subjected to too much dampness. And under such conditions Oxalis lobata flourished, sending up leaf after leaf throughout the summer, until finally it became a small, rounded hummock of rich green foliage.

In September, the flowers appeared in profusion, rich golden-yellow in colour, and borne singly on slender stems of up to about one-and-a-half inch in length. The whole plant, when it does well, has an air of refinement and daintiness about it, for its small leaves, each composed of three deeply-lobed leaflets, carried on short, slender stems arising directly from the bulb-like root-stock, are of a vivid and refreshing green, while the blossoms are rich in their colouring, and of perfect form.

But it is seldom that O. lobata proves a success. The late Mr. Reginald Farrer regarded it with high esteem, but advocated the growing of it only in the most favoured conditions, while Mr. A. T. Johnson, in his admirable book, *A Garden in Wales*, laments the fact that "it has often refused to do so much as peep above the soil" with him.

Whether my plant, heaped over with granite chips and protected to a degree from excessive wetness by a pane of glass placed six inches above it, will survive the winter and prove as attractive this coming season as it was the last, remains to be seen. From my experience of it, O. lobata would seem to require the warmest and sunniest position possible, and a perfectly drained and open rooting medium, such as that provided by a well constructed moraine, with a layer of chips around its "collar" to keep this vital part as dry as possible. Having provided these seemingly ideal conditions, this illusive Chilian may condescend to grow and even flower, but, on the other hand—will the secrets which govern the successful cultivation of this and the many other "bad doers" ever be brought to light? *M. W.*

PROPAGATION OF RHODODENDRONS BY CUTTINGS.

During recent years there has been a tendency for growers to try to obtain Rhododendrons on their own roots in preference to the more general practice of purchasing grafted plants. Propagation by vegetative means—otherwise than by grafting—should be encouraged, and in addition to the better-known and more widely used method of layering; cuttings of many kinds, if of the right type of growth and inserted at the correct time, give excellent results.

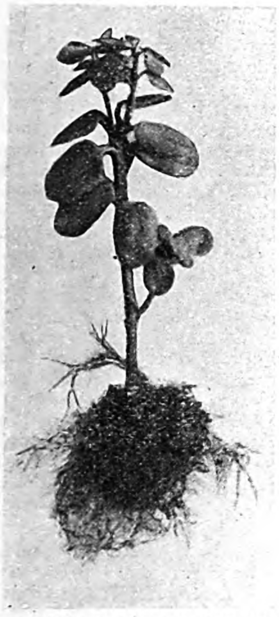

FIG. 39.—RHODODENDRON HIPPOPHAEOIDES VAR.
Inserted July, 1928; photographed January, 1929.

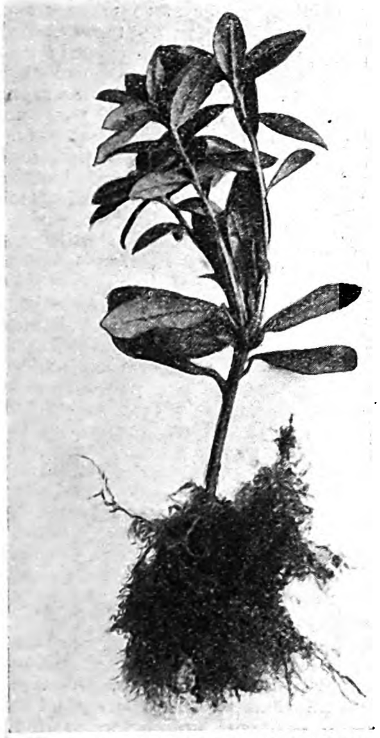

FIG. 40.—RHODODENDRON INTRICATUM.
Inserted July, 1928; photographed January, 1929.

Plants raised from cuttings possess certain definite advantages over those raised by seeds, layers and grafts. Cuttings reproduce the true characteristics of the parent plant, whereas seedlings, even of the true species, vary; and although layers would give plants of flowering size more quickly than cuttings, it is possible to raise many more young plants from a stock plant by cuttings, as only a few of the lower branches of a Rhododendron may be layered. The greatest advantage cuttings have over grafted plants lies in the elimination of the suckering nuisance, which spoils so many Rhododendron and Azalea beds unless they are being constantly attended to and the suckers removed. Unfortunately, it is fully realised that grafting must still constitute the most convenient method of increasing in quantity the majority of our larger and more showy garden hybrids.

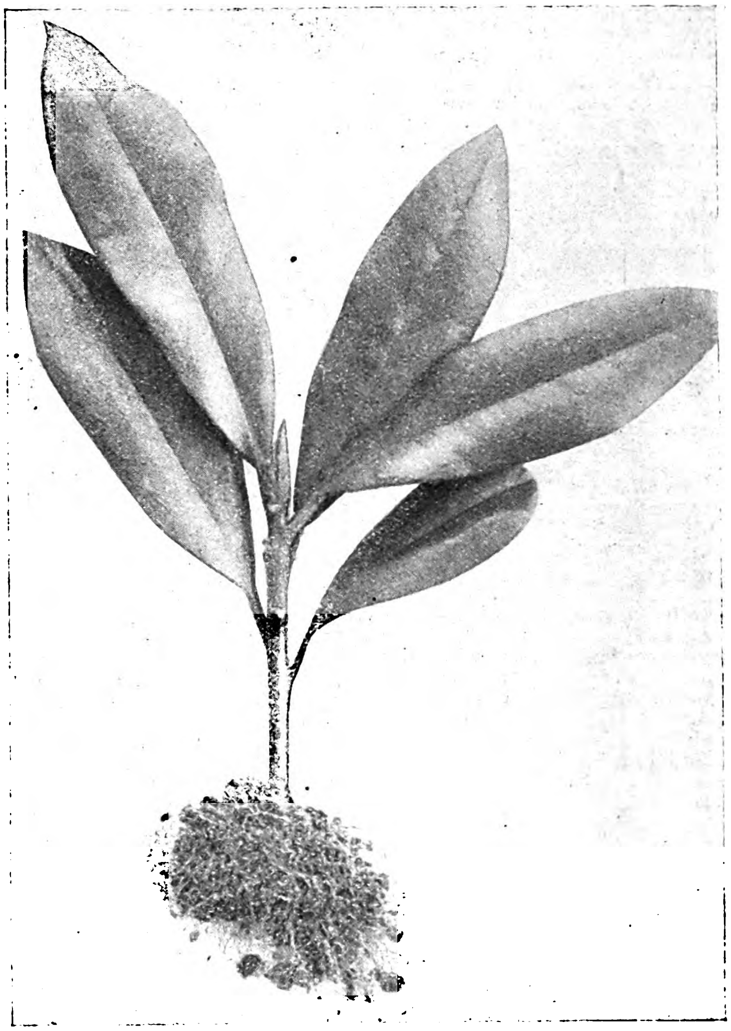

FIG. 41.—RHODODENDRON CUNNINGHAM'S WHITE.
Inserted October, 1928; photographed January, 1929.

During the past four or five years, I have tried the propagation of many kinds of Rhododendrons from cuttings, and found that from the propagator's point of view, they sort themselves out into different groups, the governing factor of each being the time of taking and inserting the cuttings.

The small-leaved Rhododendrons, mainly classified botanically under the Lapponicum series, are particularly responsive to propagation by cuttings, and anyone who has grown such species (as R. achroanthum, R. chryseum, R. fastigiatum, R. flavidum, R. hippophaeoides, R. impeditum, R. intricatum, R. nigro-punctatum, R. orthocladum, R. rupicola and R. scintillans, belonging to that series; and R. calostrotum, R. campylogynum, R. ledoides, R. radinum, R. sphaeranthum and R. saluenense, belonging to other series, must have found that nearly every one of these species has developed desirable forms which are outstanding among the others; therefore, as the perpetuation of the best forms is of the utmost importance, cuttings should be used to increase the stock,

There are two definite periods when cuttings of this group succeed best, and the method employed must correspond to the time of inserting the cuttings.

(1) Cuttings of the young tips should be secured, either with a slight heel of older wood, or at the junction of the current and previous years' growth; these cuttings may be from one to one-and-a-half inch in length, and should be inserted in late June or early July, in a warm frame with a temperature of about 70°, in a mixture of peat-moss litter and sand, and kept watered with rain-water. Cuttings treated in this way will produce roots and be ready for transference to boxes in from three to five weeks; they will make quite an appreciable amount of new growth before the winter sets in. Fig. 39 represents a cutting of Rhododendron hippophaeoides variety inserted in July, 1928, and shows the amount of new growth made between that time and January 14, 1929, when the photograph was taken.

(2) Cuttings of the current year's wood, about one inch to two inches long, taken with a slight heel, in late August or early September, and inserted under a bell-glass in a cold frame, in very sandy peat, will produce roots, and may be left undisturbed until transplanted early the following spring. This method is quite successful with the more vigorous species, such as R. hippophaeoides and R. scintillans, but such species as R. intricatum (Fig. 40), now, unfortunately, becoming a scarce plant, should be inserted indoors. *F. P. Knight.*

(To be continued.)

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XII.—OUR FIRST CAMP.

SHORTLY after leaving the bungalow at Theronliang, and proceeding down the Tidding valley, we reached the suspension bridge which marks the limit of administered territory, and crossed to the left bank of the river. The Government cannot quite make up its mind whether to maintain this bridge or to abandon it to the white ants. In its present state of genteel distress, it would long ago have been condemned as unsafe by any self-respecting engineer, but there is really no one here to condemn it, and so, year after year, it hangs together, like Kipling's tramp steamer,

> "Just a pack of rotten plates, puttied up with tar!"

and is used by hundreds of Mishmi coolies coming into Sadiya for the open season. One day it will fall down, and then Government will close it; but there are signs of possible action in the near future, and this vital link with the Mishmi Hills may be forged anew. Anyhow, we crossed in safety, and went on down the Tidding valley, sometimes in jungle, sometimes over boulders in the river bed. A tall tree which I saw now for the first time, and more frequently during the next few days, was Acrocarpus fraxinifolius, its bronze flowers scattered over the ground in prodigious amount, without affecting the appearance of the tree in full bloom. The flowers, although in build typical of the Leguminosae, have only five stamens, and are borne in long, compact spikes. Most of the flowering trees were leafless; but a few were putting forth their reddish-orange leaves, and it was often difficult to tell which were flowers and which leaves, so closely do their colours match.

A few Orchids were beginning to bloom, including Dendrobium nobile, and I noticed also plants of Vanda and Cymbidium.

Leaving the Tidding valley, we crossed a shoulder of the mountain, and found ourselves in the steep-sided narrow valley of the Lohit, perhaps a thousand feet above the river; and soon afterwards we camped in a confined space on the path. For another two days we marched through the dense jungle, which, as the trees showed, was composed chiefly of typical Indo-Malayan species. Among the commonest were the following: Terminalia myriocarpa, Pterospermum acerifolium, Kydia calycina, Acrocarpus fraxinifolius, Duabanga sonneratioides, Castanopsis indica, Engelhardtia spicata, Ficus Cunia, Saurauja napaulensis and Macaranga indica. Less common were Erythrina indica, Elaeocarpus serratus, Grewia laevigata, and the climbers Hiptage Madablota and Thunbergia coccinea.

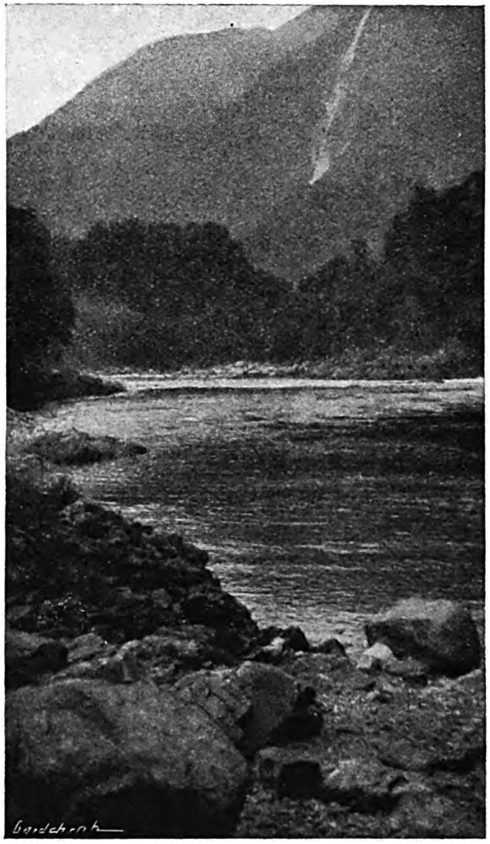

FIG. 42.—THE LOHIT VALLEY, IN THE UNADMINISTERED COUNTRY.

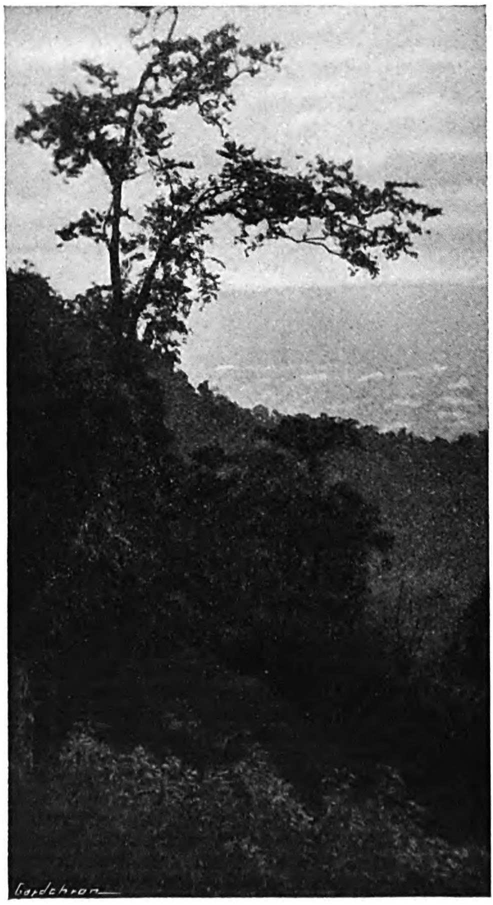

FIG. 43.—HILL JUNGLE AND THE SADIYA PLAIN.

On the second night we camped in the bed of the Lohit, at a delightful spot, and starting early on the 15th, we reached the Delei river, and crossing by the remains of the suspension bridge, found our camp prepared for us in a pasture half-a-mile above the junction of the Delei with the Lohit. Our kit had been stored in a Bamboo hut, and we pitched our tents directly on the high river bank. Eventually, owing to the curiosity of a herd of mithan which grazed here, and paid us nightly visits, we fenced ourselves in.

There were two small villages here, one on either side of the Delei, and a certain amount of arable land, past and present, on the adjoining terraces, while forest clearings extended for 4,000 feet up the flanks of the range to the 6,000 feet level; but mostly the steep mountains which enfolded us were covered with dense forests, although it was clear from an inspection of the highest visible peaks, where snow still lingered, that the belt of Indo-Malayan jungle to which reference has been made, only lined the bottom of the deep valley.

Sparse as the local population was, we were not lacking in company, for every day saw strings of Mishmi coolies returning home from the plains (whither they repair every cold weather to cut canes) for the spring farming. But these people carried loads of their own, so they could be of no service to us, and we had to rely on the local inhabitants, who presently produced the first dozen coolies willing to carry our boxes two days' journey up the Delei valley. So far, I had been on familiar ground, having tramped this way in December, 1926, but under conditions which, in the depth of winter especially, made it impossible to observe much of the forest flora. Our business now was to transport ourselves and fifty loads so far up the Delei valley as possible, over entirely new ground; and during the three weeks we were in camp by the bridge I had ample leisure to look about me and gather a good general impression of the composition of the forest. But this was not easy. In the jungle, all is obscure. The canopy of foliage is far overhead. Everything is smothered up, and in the confusion it is almost impossible to say which leaves belong to which branch. The very trunks are so coated with moss, overlain with a covering of larger epiphytes, that rarely do they reveal themselves; and the way of the seeker after knowledge is beset with difficulties on the ground, lianias to trip over, thorns to tear the flesh, Bamboos to obstruct. Recourse must therefore be had to indirect methods of observation for the recognition of species, and once inside the jungle, it is really more profitable to look on the ground than in the air. Fruits, leaves and flowers can be picked up, especially after a high wind. No fragment, however lonely, need be neglected, as sooner or later a parent will be found for the orphan; for although no two trees in contact will be alike, it is surprising how frequently a species recurs. Gradually other bits and pieces are found, and presently the puzzle can be fitted together.

If now, leaving the interior, we stand on one side of the river in the spring, and look across at the banked rows of tree tops whose billowy domes interlock to form the roof of the jungle, a very different impression is formed. At first, we may be unable to distinguish anything in that massive flood, rolling in ruffled waves, which here and there break and curl into strident colour, but mostly swamp the cliffs in deep seas of bottle-green. But by dint of patience, much may be learnt from such an aerial view, especially with a good pair of field glasses, and one gradually learns to distinguish a sufficient number of species to gain a good general idea of the composition of the forest, supplemented by what one has seen in the interior.

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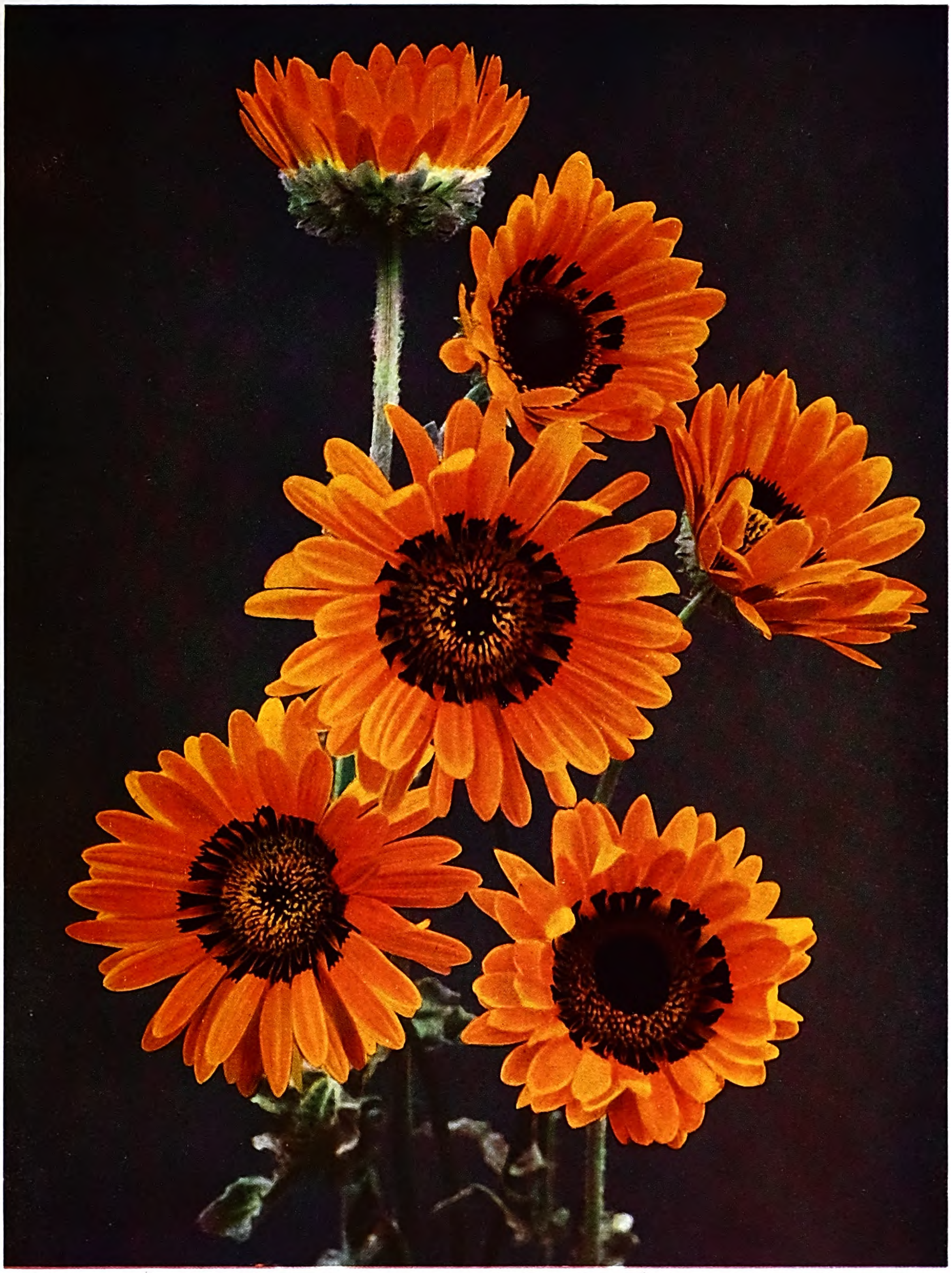
* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; November 3, Vol. LXXXIV; and January 19, 1929.



VENIDIUM FASTUOSUM.

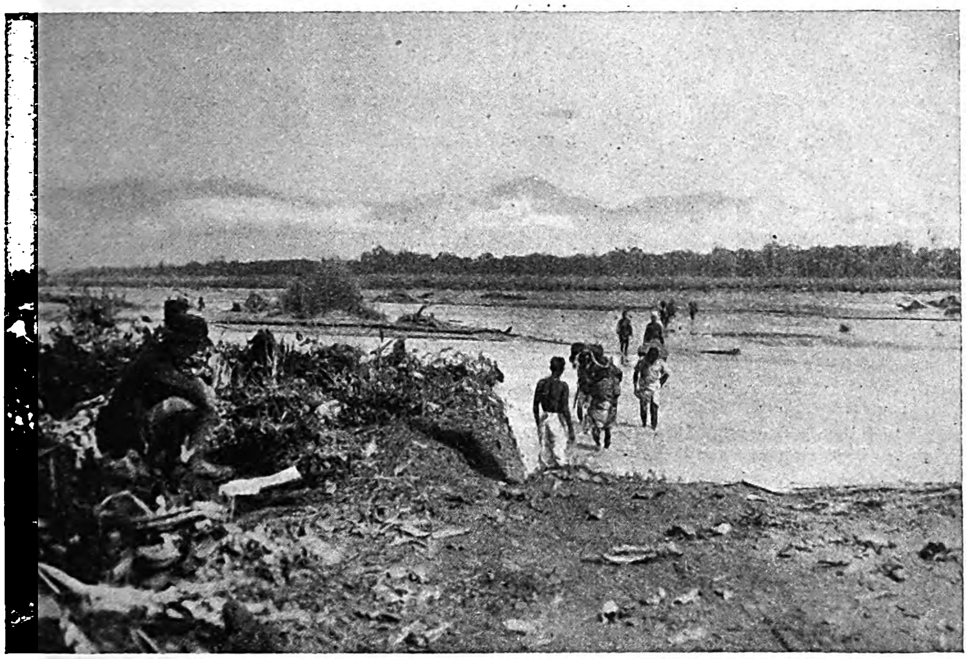


FIG. 44.—CROSSING THE DIGARU; MISHMI HILLS IN THE DISTANCE.

The Monocotyledonous trees—Palms, Pandanus and so forth, may be picked out at once, and so too can many of the big Palm-like Araliaceae, such as Trevesia palmata, Heteropanax fragrans and Brassaiopsis. A few, a very few, trees will be in flower, or at least in such buoyant flower as can be recognised at this distance. Such are the cardinal red of Erythrina indica, the reddish-bronze of Acrocarpus, and the white-cloud puffs of Derris robusta. (This last was abundant, but difficult to get at; after several abortive attempts, I at last reached a tree and picked up some fallen flowers. Except that they were smaller, with a more hairy calyx, they did not differ materially from those of D. robusta collected a month earlier at Pasighat.)

Other trees can be recognised on sight by some peculiarity of foliage or habit—for instance, the enormous, fidgety leaves of Pterospermum acerifolium, a deep sonorous green above, but displaying their almost white undersurface as the breeze catches them and turns them over. A few trees are leafless, even at the end of March, among them a large Sterculia, with several capsules still clinging to its bare boughs—it must shed its leaves in response to the cold weather of December-January, rather than to the hot weather of April-May. But most of the deciduous trees are conspicuous now for their new raiment, the sharp greens and acid yellows, and warm reds of spring foliage, which chime and ring melodiously against the deeper note struck by the evergreen forest. A small Sterculia with hanging flowers of coral-red, is coming into leaf, and an Ash is already fully clothed in shining new leaves. Two other trees, one conspicuous for its fresh green, rather Lime-like foliage (possibly Grewia sp.), the other for its tall, straight trunk and smooth, pale bark, I could recognise anywhere, but in the absence of flowers, was unable to name, although I believe it to be Lagerstroemia parviflora. In the thickets and pastures along the river bank were many interesting trees and shrubs. Glycosmis pentaphylla, with snow-white flowers, filled the air with fragrance, but was more than rivalled by the climber Caesalpinia Nuga, whose pyramids of gamboge flowers put up a perfect barrage of scent. There was a large number of climbing plants, some scrambling, some twining, some really climbing with the aid of tendrils. Woody climbers are typical of the tropical rain forest, as opposed to the temperate rain forest, whereas epiphytes are just as common and almost as varied in the latter as in the former. Among the many climbing plants seen were: Hemidesmus indicus and several other Asclepiadeae in fruit; Aristolochia Roxburghiana (or an allied species); Jasminum scandens, and another species not in flower; Schizandra propinqua, in which the filaments of the male flower are united into a small, fleshy dome, with tiny ports, out of which peep the yellow anthers; Sabia sp.; Smilax spp.; Aspidopterys sp.; Vitis spp.; Millettia cineria; Clematis sp. and Bauhinia sp. not in flower; Combretum sp.; Ventilago, Porana, and the semi-climbing shrub Dalbergia tamarindifolia, its branches tightly packed with small, sulphur-yellow flowers. In addition to these were several Menispermaceae (Stephania and others), and the ones previously mentioned.

Along the river bank, also, where the mithan had driven paths through the scrub, a large and peculiarly pungent Zanthoxylum, like Z. acanthopodium, was common, growing with Ash and Glycosmis, and a small bushy Sophora with pale yellow flowers and scarlet seeds in its moniliform pod. Here, too, among the scattered trees, a small Stereospermum—not S. chelonoides, for it had bipinnate leaves—was frequent, with the more common Engelhardtia spicata, which sometimes at least sheds its leaves on one side while it is growing new ones on the other, so that it is never quite bare; this Engelhardtia is always easy to recognise in fruit, by reason of its long, fat swish-tails. Bischofia javanica was also fairly common, an untidy tree at this season, half disrobed and with no apparent preparations for a change of clothing.

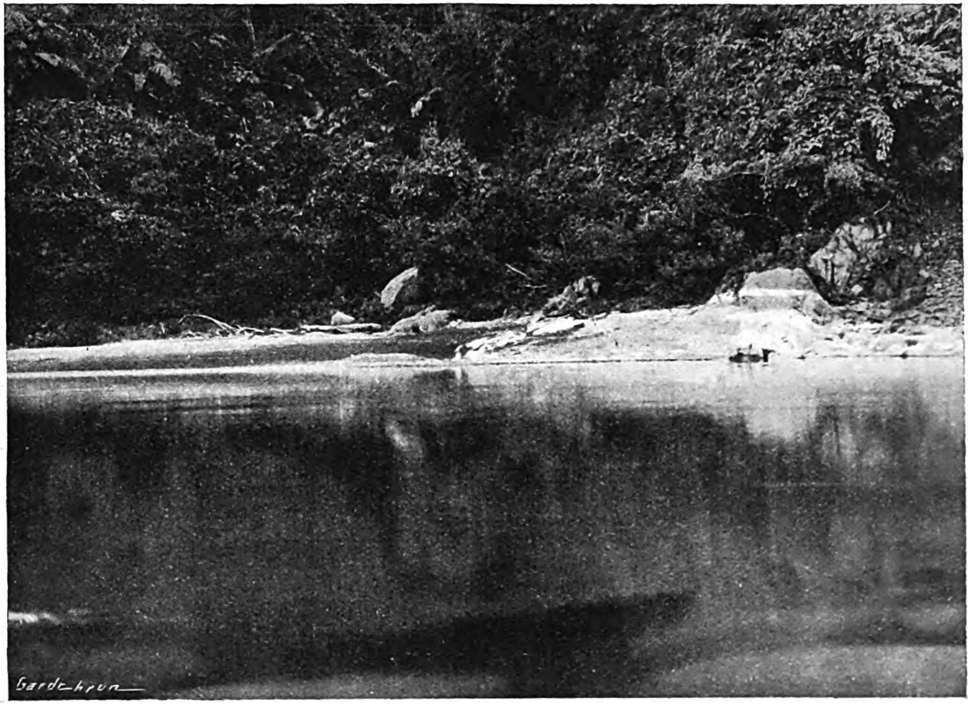


FIG. 45.—A GOOD FISHING POOL ON THE LOHIT.

By March 22, twenty-four coolies had started up the Delei with loads; and then came the rain, which put a stop to everything. *F. Kingdon Ward.*

PLANT HISTORY IN NOMENCLATURE.

(*Continued from p.* 14).

The Romance of Tea.

Is there any other plant-name which is so widely known, so universal, popular and welcome as that of the Tea? It has found its way into every land, and wherever it goes it stands for the cup that cheers but does not inebriate. True, the cup is sometimes almost a solid one, for in very cold lands where fat is needed the tea is made into a kind of soup, gruel or other semi-liquid, semi-solid food, which answers for meat as well as drink!

While a score of different plants are in use in one part of the world or another as substitutes, there is one which is pre-eminently the Tea plant. Mountain Tea, Sweet Tea, Brazilian Tea, Bush Tea, Maté, Yerba or Paraguay Tea, and many others might be named, but they all acknowledge the supremacy of the Chinese name for the Thea Bohea, of Linnaeus, now usually referred to as Camellia Thea, and known in several distinct varieties.

It is not necessary to go into details respecting orders and genera, species and varieties, but it may be stated generally that Tea is a species of Camellia, a genus of the Order Ternstroemiaceae, and that Hooker thought it possible that the stock is to be found in the wild plant of Assam, which has been named Camellia theifera. With other botanical names and theories we do not here trouble ourselves, nor need we enter into the question of distribution, or relate the legends which have grown up around the plant in the course of centuries.

The name Tea is pure Chinese, and with this and its derivatives we will now proceed to deal. The student who is unfamiliar with the vagaries of a Chinese dictionary and the peculiarities of picture writing may be excused if he finds some difficulty in the study of the word. It should be remembered that there are many dialects in China, and that, while the written form of a word is fixed and definite—the pronunciation may vary greatly. Thus the word-picture for man resembles an inverted capital V, thus Λ, and represents his two legs; yet it is pronounced *jen* in one place, *yan* in another, and *ren* in another. So is it with the word for Tea. In Canton, for example, it is called *ch'a* with an aspirate, yet this is the same as the *ta*, *tay*, *thè*, *cha* and other forms to be met with in other parts of the country and in other lands.

These various pronunciations are of value in relation to commercial history, since they show that we received our first consignments from a district where it was named *Tay* or *Thé*. It is well-known that frequently Tea was formerly called Tay in this country, and that during living memory the pronunciation has undergone the change which is represented by these two modes of spelling the word. It is possible that our English pronunciation was at one time affected to some extent by the French, but this is a question for later consideration.

The Chinese picture-word for Tea is derived from the radical which represents herbs and plants, and a second symbol usually pronounced *To*, which made it clear that a plant was intended, and suggested the sound to be employed. From this it seems clear that the Chinese did not introduce Tea from abroad, but knew it long ago as a native plant, and used it from early times as a beverage.

From the *Flora of China*, published some years ago by the Linnean Society, we learn that fourteen different native species of Camellia were known forty years since to botanists. The most important of these is the plant now under consideration, which has been described under a dozen different names, such as Camellia Bohea, C. theifera and C. viridis, or Thea sinensis, T. japonica, T. assamica and the like. Numerous specimens from China, Formosa and Japan are preserved in the herbaria, but whether or not the plant is really indigenous eastward of Cachar and Assam is regarded as doubtful, although my friend the Rev. B. C. Henry, of Canton, recorded that the Thea Bohea, L., was really wild in Hainan. What is clear is that various species of Camellia are found in many eastern lands, and that from time immemorial the leaves of one or other of these, but especially of the form known as Thea, have been employed in the making of a much esteemed beverage known as Tea, Thè or Cha. The latter is the form in use in Japan, but it is recognised as an imported term, and from it the Japanese terms for tea-pot, tea-cup, tea-garden and many others are derived, although they have two distinct forms of tea-kettle with different names.

As for the history of the word in other lands, we learn that Tea was introduced into the west towards the close of the sixteenth century, but there is a good deal of confusion, if not contradiction, among travellers, writers, historians and philologists respecting the district whence the name originally came and its mode of introduction into Europe. Giles (*A Glossary of Reference*) states that it was called *Tcha* or *Chaw*, the former being the Cantonese pronunciation, but that our word Tea is from the Swaton and Amoy dialects, where the plant is known as *Tay*. It was so pronounced in early times, and continued to be so called down to the middle of the last century. My grandmother, who died about 1865, always brought out her best *chainey* (as she called her china-ware) when she had friends in for a cup of *Tay*. So Pope wrote—

> "Here thou, great Anna! whom three realms obey,
> Dost sometimes counsel take—and sometimes tea."

Samuel Pepys wrote in 1660 (September 28): "I did send for a cup of *tee* (a Chinese drink) of which I never had drank before." Blount, a few years later (1674), wrote it *cha*, and these two divergent forms are represented by the French *thè* on the one hand, and the Italian *cia*, Neapolitan and Portuguese *cha* on the other.

In our English dictionaries the spelling *tea* prevailed, and in 1742 Bailey gave the following:—

> "*Tea*, a known liquor made of the leaves of a *Chinese* shrub."

Another dictionary of the same period has:—

> "*Tea*, the leaf of an *Indian* shrub, which having boiling water poured over it, and impregnated therewith, and then sweetened with loaf-sugar, is become the universal liquor for the ladies."

Osbeck, a friend and disciple of Linneaus, who travelled in the east in 1750 and was a good naturalist, tells us that the Europeans learned to drink tea in the fifteenth (? sixteenth) century, and since that time "have vied with each other in giving the Chinese the most money for this and other goods which are become fashionable." He adds that Tea grows both in China and Japan, as well as in Tonkin, but that according to Du Halde, the best Tea comes from Fokien. "We have as many names for Tea," he writes, "as there are places where it grows, and different ways of preparing it," and he adds a number of interesting particulars which we have not space to copy.

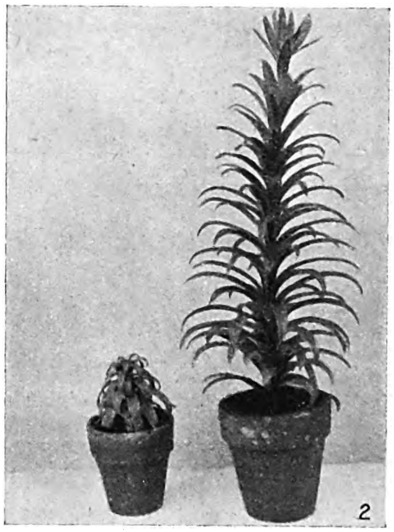


FIG. 46.—ROSETTE DISEASE OF LILIUM.
Left, plant infected in 1926: Right, normal plant from clean bulb, 7–9 inches in circumference.

At one time all Tea was named Bohea after two celebrated hill ranges in the province of Fokien, whence the most famous kind was procured. Thus Pope:

> "To part her time 'twixt reading and bohea,
> To muse and spill her solitary tea;"

And Byron:

> "I must have recourse to black bohea."

The commercial and ceremonial use of Tea, its folklore and other associations, might well fill a volume. Who has not heard of, if he has not seen, the famous brick Tea, so largely used in Mongolia, Siberia and Russia, where it is called Cha (*tscha*), and has been often used as currency, like salt and other commodities elsewhere? One of the most interesting accounts of the growth and preparation of Tea is that by Fortune entitled *The Tea Districts of China and India*, which is not yet out of date. *Hilderic Friend.*

(*To be continued.*)

A NEW DISEASE OF LILIES[*].

Those whose interest in Lilies is sufficiently keen to take them a little below the surface of things, are aware that towards the end of the Victorian era there was a considerable trade in the bulbs of what was then called the Easter Lily, between Bermuda, on the one hand and Great Britain and America, on the other. The history of the industry in Bermuda has already been set out generally in *The Gardeners' Chronicle*[†], and it is sufficient here to point out that, to find its beginning, we must go back to about 1876, when one Harris, a florist of Philadelphia, received some bulbs of L. longiflorum var. eximium from Bermuda, and, recognising the commercial possibilities of the plant, particularly for forcing into bloom at Easter, promptly attached his own name to it. Hence, the Lilium Harrisii of commerce. The incident affords but one more instance of the haphazard way names are given to plants and are retained for years.

The cultivation of this Lily in Bermuda prospered, and in the course of a few years the export trade in the bulbs assumed considerable proportions. This continued until about 1896, when the business reached its maximum, and thereafter commenced to decline. The decline was rapid, and although the export never seems to have entirely ceased, it had reached such a low ebb long before the war that, so far as Britain was concerned, the trade was negligible.

The decay of the industry was primarily due to disease which doubtless had a footing in the bulb fields prior to 1889, as in that year Kean investigated the conditions locally and afterwards published his conclusions.[‡] At the time, as well as for years afterwards, it was called the Bermuda Lily Disease, and in so far as anything was known of it in the early days, it was vaguely supposed that a fungus, which Kean identified with Botrytis, was responsible for what, happily, has since proved to have been only the temporary ruin of the industry. The supposition had some basis of support at the time, in the fact that specimens of diseased material sent by Kean to Marshall Ward were identified by him as attacked by Botrytis. Ward had recently made a study of the fungus on Lilium candidum, and had published the results of his researches.[§]

In those days the sciences of mycology and phyto-pathology were not so advanced as they are now, and for a long time it did not seem to have occurred to anyone that more than one disease might have been present in the Lily fields. At that time, too, although, as we now know, it would have availed little, there was no prophylactic or cure for Botrytis; indeed, it is only within comparatively recent times (1923) that Bewley[‖] has suggested the use of what seems a specific for the fungus, in a two per cent. spray solution of calcium bi-sulphite.

By 1896, the disease had spread to such an extent as to interfere with the growing and marketing of the bulbs. Report after report on the disease was made, but nothing came of them because the real cause was not suspected. Various suggestions as to remedial measures for the Bermuda planters' troubles were made at the time, but no developments followed, and meanwhile the world's markets were gradually lost, mainly to the Japanese, although a modest proportion of bulbs was grown in the Azores. As time went on, it became apparent that more than one disease was at work and that, except, perhaps, in a damp season, Botrytis was not among them as a material cause of the trouble.

In 1915, C. W. Carpenter, of the United States Department of Agriculture, carried out an investigation of a mass of material sent to him by the Department of Agriculture in Bermuda, and his observations went to show that a mosaic disease was present on the plants as well as another disease which the Bermuda planters called the "yellow disease," of which the main external symptom is a noticeable stunting of the habit of the plant. Early in 1925, the attention of the Plant Pathologist to the Department of Agriculture in Bermuda, Mr. L. Ogilvie (now of Long Ashton), was drawn by a Lily farmer to the peculiar appearance of the plants in one of his fields. The plants showed a cylindrical habit of growth instead of the pyramidal habit characteristic of the Lily; the leaves were slightly yellowed and not dark green as they should have been, and the upper leaves curled downwards and were often distorted. It appeared that some weeks previously the plants had been infested with an aphis of sorts, and as the symptoms seemed to be identical with those exhibited by the Lilies investigated by the U.S.A. Department of Agriculture ten years before, it was decided to investigate the matter.

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[*] "A Transmissible Virus Disease of the Easter Lily," by L. Ogilvie, M.Sc., M.A., B.Sc. *The Annals of Applied Biology*, Vol. XV, No. 4, November, 1928.

[†] No. 1,996. Vol. LXXXII. March 28, 1925.

[‡] "The Lily Disease in Bermuda," *Bot. Gaz.*, XV, January, 1890, p. 8.

[§] "A Lily Disease," by Marshall Ward. *Ann. of Bot.*, II (1889), p. 184.

[‖] *Diseases of Hothouse Plants*, by W. F. Bewley (1923), p. 65.

Ogilvie soon reached the conclusion that he had to deal with a transmissible virus disease, and searching for the agent of transmission, his suspicions fell on the aphis already referred to. Research followed along the line indicated, and ultimately Aphis gossypii was found to be a carrier of the infection. This aphis infests the hedges of Hibiscus, which are so common in the Bermuda fields, and congregates on the stems of the Lilies soon after they begin to push through the ground in what corresponds to our late autumn. (The plants are usually in bloom in March). By about the middle of December the aphis has done its work and characteristic symptoms of the disease begin to appear in the field, gradually spreading as the months go by. At first the current season's infection is usually apparent in patches about the fields, the patch centering on a plant of stunted growth of which the bulb was infected when planted, and covering about fifteen plants, which form a rough circle around the stunted plant. In some cases, however, the spread of infection is more rapid and covers a larger area.

During flowering time, the lower leaves of diseased plants turn yellow and the stem dies quickly from the base upwards; moreover, plants which have had their vitality lowered by the virus disease, fall a ready prey to attack by a bulb mite (Rhizoglyphus hyacinthi) which infests the soil in Bermuda and burrows into the base of the bulb, causing basal rot in much the same way as the Japanese bulb mite will eat the hearts out of bulbs of L. auratum and others on their passage here from Yokohama. The disease has a marked effect on the size of the bulbs and causes them to split up, until they are ultimately very small and useless for commercial purposes (Fig. 49). In the course of his investigations, Ogilvie had no difficulty in infecting healthy plants with the disease, by using the aphis for the purpose, and the case seems clear.

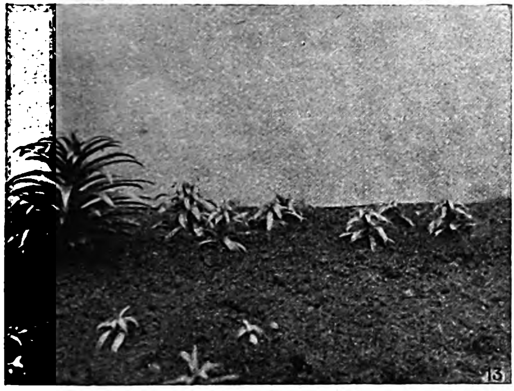

FIG. 47.—ROSETTE DISEASE OF LILIUM.
A "clean" plant among many infected and stunted plants.

Although the point does not seem to have been finally disposed of, it seems possible that other species of aphis found in Bermuda may be released from suspicion of any serious part in the transmission of this disease, so that if Aphis gossypii can be disposed of, the virus disease should disappear. An important point which emerges from Ogilvie's researches is that the disease is not communicated through the soil, nor through contact of a diseased plant with a healthy one; in fact, the "carrier" must be present. On the other hand, once a plant has been infected there is no recovery, and if the bulb is lifted, rested and replanted next year, the tell-tale symptoms reappear. In such cases, however, Ogilvie observed that the symptoms are delayed until about half-way through the growing period.

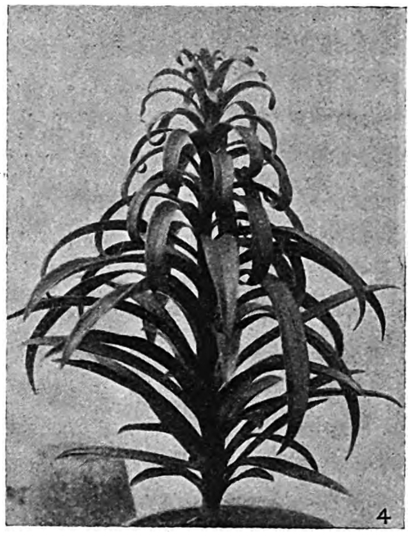

FIG. 48.—ROSETTE DISEASE OF LILIUM.
A plant showing typical symptoms of current season infection by aphides.

This brings us to the conclusion that if the aphis can be controlled, the disease will also be controlled, and although the aphis has a natural parasite in one of the Braconids, and is esteemed a delicacy by various larvae and beetles, some more definite form of control is essential. Happily, this is to hand in nicotine applied in the form of dust, or as a spray solution, either method accompanied by scrupulous cleanliness in cultivation and the destruction of diseased stock.

The net result of Ogilvie's researches and the application of appropriate measures of control has been to reduce the "rosette" disease to what is virtually a negligible point, and as the mosaic disease which seems also to have been present has apparently been mastered, the produce of the Bermuda Lily fields may be considered free of suspicion. It remains now for buyers to do their part and as the Easter Lily is bought here mainly by the trade for the sale of the flowers in the florists' shops, the matter rests more with them than with private growers. No doubt the full resuscitation of the Bermuda Lily industry hinges mainly on the price of the bulbs, but the tendency of the day in favour of British products should have its effect in turning the scale.

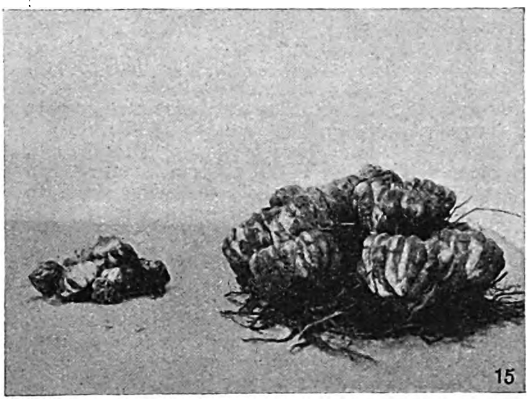

FIG. 49.—ROSETTE DISEASE OF LILIUM.
Diseased bulbs on the left; clean bulbs on the right, illustrating the effects of infection on the size of the bulbs.

Mr. Ogilvie is to be congratulated on a praiseworthy piece of research. The illustrations (Figs. 46, 47, 48 and 49) have been kindly lent by the Cambridge University Press. *A. Grove.*

JOHN INNES HORTICULTURAL INSTITUTION.

CONFERENCE ON POLYPLOIDY.

THE meeting arranged to celebrate the centenary of the Founder's birth took place at Merton, on Saturday, January 19, and was favoured with bright sunshine following a number of dull days. There was a large gathering of botanists and workers in horticulture.

Under the Chairmanship of Sir David Prain, who is Chairman of the Council of the Institution, the proceedings began with a speech by Mr. Ernest Innes, nephew of the founder. Mr. Innes described the way in which John Innes first came to own property in Merton, and the events which led up to the foundation of the Institution. John Innes was at the time in partnership with his brother, dealing in land in the City, and one day, at a sale, where they were waiting to bid for some property in town, the Merton Park Estate was put up. The auctioneer insisted that it was a great bargain, and was even willing to back his opinion with a guarantee, so in the end the brothers bought the property, neither of them having seen it or heard of it before. From this chance beginning arose John Innes' connection with the neighbourhood. At a later period he settled in Merton, built himself a house and devoted himself to developing the estate. He took a great interest in Merton, building a Freemasons' Hall and helping to found the Rutlish School. He planted trees along the new roads and took a special pride in the Holly hedges, which were clipped all around the estate by his own men, the tenants being bound not to cut them down. At his death he left considerable funds for the foundation of a School of Horticulture. His will also provided that a public park and a recreation ground should be made out of the private grounds attached to his house. Mr. Innes said that he did not think his uncle had contemplated anything of such national significance, and spoke warmly of the work that had been done to put the Institution on its present footing, especially through the high standard established by the first Director, the late Mr. William Bateson.

The scientific part of the programme was started by Mr. J. B. S. Haldane, director of the genetical work at the Institution, who gave a brief definition of the subject to be discussed. The cell-nucleus in any plant, he said, consists of a definite and characteristic number of bodies, the chromosomes—as a rule—an even number. When the plant makes gametes, that is, pollen and ovules, each gamete gets just half of the number of chromosomes characteristic of the plant. There is strong reason to think that with these chromosomes are associated most, but not all, of the characters associated with the species. But occasionally a plant appears with a number differing from that generally found in the species. For example, the ordinary Primula sinensis has twenty-four chromosomes, but the giant race has forty-eight. Here twenty-four is the diploid number (*i.e.*, twice the gametic number in the normal race), the giant race with forty-eight being tetraploid. A race with three times the diploid number would be hexaploid, and so on. In addition to these regular polyploids there are aneuploids, where the number is not a simple multiple of that found ordinarily. Mr. Haldane went on to emphasise the difference between the two classes of polyploids, viz., auto-polyploids, where all the chromosomes of the plant are derived from one species by doubling, as in giant Primula sinensis, and allo-polyploids, where half the chromosomes are derived from one species and half from another, the result of doubling in a species cross, as in Primula kewensis. Polyploids of this latter class behave more like diploids, whereas auto-polyploids behave very differently.

Mr. Haldane was followed by Dr. C. C. Hurst, of Cambridge, who gave a rapid survey of the genera of plants in which polyploidy has been found to occur, the list including Strawberries, Sugar Cane, Maize, Tomatos, Ornamental Cherries, Roses, Tulips, Hyacinths, Dahlias, Cannas, Primulas, Petunias, Ranunculus and Iceland Poppies. Many of these, he stated, are giant forms which appeal to the horticulturist, and it is therefore evident that polyploidy is a fruitful source of horticultural varieties. Dr. C. C. Hurst also affirmed his belief in the large part played by polyploidy in evolution, not only in plants but in animals, an attitude that was strongly challenged by Professor E. W. MacBride in the discussion that followed.

The next speaker was Professor R. Ruggles Gates, of King's College, London. Professor Gates, who was himself the first to report a case of polyploidy (Oenothera, in 1909), gave a historical account. He described how rapidly the subject had advanced since the first discovery, and dealt with the various theoretical views that have been put forward to account for the origin of polyploids. His views provoked a certain amount of controversy, particularly as to whether an egg-cell with the diploid number of chromosomes, instead of the usual half number, can take part successfully in fertilisation.

Mr. C. D. Darlington, of the John Innes Institution, then gave a short account of the mechanics of chromosome pairing, in the light of his recent work and that of the late Mr. W. C. F. Newton on Tulipa and Hyacinthus, after which Mr. J. B. S. Haldane, again taking Primula sinensis as his example, discussed certain difficulties which auto-polyploidy put in the way of the practical breeder. Where a "recessive" character, *i.e.*, one that only appears in the complete absence of the corresponding "dominant," will appear in one plant in four of the second generation from a cross in the diploid, the proportion in a tetraploid is only one in thirty-six; and the chance of combining two recessive characters, one to sixteen in the diploid, is in the ratio of one to over a thousand plants in the tetraploid, thus greatly increasing the difficulty of producing any desired combination. For example, a single plant of a Blue Giant Primula sinensis once turned up at a famous nursery; the nurseryman knew that if he crossed it out to anything else he would have great labour to recover it, so he contented himself with selfing the plant, which turned out to be self-sterile, and died, the blue strain being thus lost to cultivation. This, said Mr. Haldane, was why we had no blue giant Primulas to-day. A further complication arises, he explained, in the matter of linkage—in the diploid only one type of arrangement is possible, in the tetraploid one may be dealing with any one of seven different arrangements.

Dr. C. L. Huskins then described some of the work which had been done with cereals. The bread Wheats are hexaploid. The great variability in Wheat and Oats, he said, is due in part to their polyploidy. More primitive types of Wheats are known which are tetraploid and diploid, and crosses of different tetraploids have produced octoploids by doubling.

Dr. F. W. Sansome discussed and demonstrated the artificial production of polyploids—triploids and tetraploids—in Tomatos. The method is to cut back the young plants, when a certain proportion of the adventitious shoots arising from the callus are found to be polyploid. The treatment produces, on an average, one polyploid plant in fifty. This method is of great value in that polyploids can be obtained directly from diploids of known constitution and the relative behaviour of the two groups studied.

Mr. M. B. Crane discussed the effect of polyploidy on fruit production in Rubus and Prunus. In the former genus cytological work had shown, he said, that abundant fruit production was associated with the possession of an even chromosome number, the diploids, tetraploids and hexaploids being very much more productive than the triploids and other uneven forms. Thus the Loganberry, with forty-two chromosomes, a hexaploid, is much more prolific than the Laxtonberry, a heptaploid with forty-nine chromosomes. Similarly, all the triploid Cherries in cultivation are ornamental forms, grown for the flowers only and often completely sterile, the fruiting forms being all (approximately) diploid or tetraploid. Mr. Crane showed specimens of Prunus seedlings raised at Merton.

Miss Pellew gave a demonstration of the allo-polyploid Primula kewensis, the well-known fertile tetraploid hybrid between Primula floribunda and P. verticillata.

Among those present were Mrs. Bateson, Miss E. R. Saunders, Dr. A. W. Hill and Dr. O. Stapf, of Kew, Professor V. H. Blackman, Professor E. W. MacBride, Professor F. W. Oliver, Professor Dame Helen Gwynne-Vaughan, Professor J. Percival, of Reading; Professor F. L. Engledow of the Cambridge School of Agriculture; Mr. F. C. Brown, of the R.H.S. Gardens; Mr. W. Hales, of the Chelsea Physic Garden; and Professor J. S. Huxley. *Hilda Schafer, John Innes Horticultural Institution.*

MESEMBRYANTHEMUM.

(Continued from p. 34).

17.—CRYOPHYTUM, N. E. Br.

C. gibbosum, N. E. Br.—Annual, ¾–1½ inch high, with 2–3 pairs of opposite and widely-spreading branches ½–2 inches long, each bearing 1–4 flowers at the end; whole plant glabrous and papulose, with about 4 papulae in the space of a line. Branches about 1 line thick at the upper part, fleshy, tapering downwards and becoming dry and rigid below, with internodes 2–6 lines long, green or dark red. Leaves opposite, all withered on the specimens seen, 2–10 lines long, ascending or spreading, apparently terete, obtuse, dilated into a flattened sheath and scarcely united at the base, papulose, and with or without marginal cilia at the base. Flowers bracteate, sessile. Calyx-tube above its union with the ovary, ½-line long, unequally 4–5–lobed above; lobes 1¼–2¼ lines long, subulate from a dilated base, which is more or less membranous and ciliate at the margin, and with a stout and very conspicuous hump or compressed gibbosity ½–¾ line long, spreading horizontally from the base of each. Corolla apparently 3–4 lines in diameter; tube about 1¼ line long; petals about 1½ line long, white, sometimes tinted with lilac at the tips. Stamens few, 1–1½ line long. Stigmas 4–5, erect, about ½–line long. Ovary half-superior, 4–5–angled, with 4–5 cells; placentas axile.

C. nodiflorum. L. Bol. in *S. Afr. Gard.*, 1928, p. 84, f. 34, as to No. 3 only.

Piquetberg Division: Eendekuil, Maughan Brown.

The gibbosities on the back of the calyx-lobes are remarkable, and unlike anything I have yet seen in this group.

C. nanum, N. E. Br.—Annual, 1–3 inches high, branching from the base, coarsely papillate with glittering watery papillae, glabrous. Branches 1–3 inches long. Leaves opposite, petiolate, ¾–2 inches long, ½–1 inch broad, spathulate-ovate or rhomboid-ovate, acute or acuminate, flat, more or less undulated, rather abruptly narrowed below the middle into a petiole ¼–1 inch long and 2–4 lines broad, thick and fleshy, with a prominent midrib beneath, and much more coarsely papillate on the lower than on the upper surface, with the papillae ¼–½ line in diameter, green or reddish. Flowers solitary or 2–5 in a cyme, terminal. Pedicels 1 line or less long, 1¾–2 lines thick. Calyx produced above the ovary into a tube about 1 line long, sub-equally 5-lobed above, covered with large, glittering papillae ½–¾-line in diameter, ovary, part sub-globose, 3½–4 lines in diameter; lobes apparently erect, 2–3 lines long and about the same in breadth, sub-orbicular, obtusely rounded at the apex. Corolla apparently not more than 6–8 lines in diameter; petals united below into a tube 2 lines long, with the free part 1¾–2 lines long, very slenderly filiform-linear, lilac-pink at the apical part, white at the basal part. Stamens in several series, the longer about 2 lines long, creamy-white. Stigmas 4–5, erect, with recurved tips, 2 lines long, filiform, white. Ovary half-superior, 4–5-celled. Capsule half-superior, 3–3½ lines in diameter, 4–5-angled, with 4–5 raised and gaping sutures, with blackish-brown edges.

Malmesbury Division: Region of Saldanha Bay, Maughan Brown.

This species seems to be allied to the giants of the genus, C. Barkleyi, C. grandiflorum and C. grandifolium, but is very much smaller than any of them.

C. Bijliae, N. E. Br.—Annual, about 6 inches high, glabrous, papulose. Stems several from the base, erect, cymosely branching at the top, apparently somewhat angular, with internodes ½–1 inch long, 1–1⅓ line (or perhaps more when alive) thick, with distinct watery papulae. Leaves opposite on the stems, alternate on the flowering part, ½–2 inches long, 2–8 lines broad, 1 line thick, the lower more or less spathulate-ovate or spathulate-lanceolate, cuneately tapering into a petiole, the upper more or less cuneately-lanceolate or linear-lanceolate, obtuse or acute, slightly channelled above, keeled beneath, minutely papulose under a lens, green, often reddish at the edges. Flowers usually alternate and opposite a leaf along the branches of the cyme. Pedicels 2–5 lines long. Calyx acutely 5-angled on the ovary-part, somewhat unequally 5-lobed, minutely papulose; the two leafy lobes 2½–4 lines long, linear or narrowly spathulate, obtuse. Corolla only seen in withered condition, with the tube 1½-line long, and the free part of the petals 2 lines long, less than ¼-line broad, linear, obtuse, stated to be creamy white, slightly tinted with pink at the tips on the under-side. Stamens in 4–5 series, white. Stigmas 5, erect, 1 line long, filiform. Ovary half-superior, conical and 5-angled at the top, papulose, 5-celled. Capsule 2½–3 lines in diameter, when closed, 5-angled, of generic structure. Seeds less than ½-line in diameter, compressed, D-shaped, minutely tuberculate, brown.

Mossel Bay Division: near Great Brak River, Mrs. D. van der Bijl, 44.

Allied to C. Rogersii, L. Bol. and C. Wilmaniae, L. Bol., but with broader leaves, and an angular calyx, which is not nearly so coarsely papulose. *N. E. Brown.*

(To be continued).

THE YELLOW DAY LILIES IN AMERICA.*

(Concluded from p. 66).

Early-flowering Garden Varieties.

The hybrids in the group of early-flowering garden varieties are fairly numerous. More have been produced than are to be found in current nursery lists. Every effort has been made to obtain all available by purchase and through the generous gifts of several amateurs. In general terms, they fall into three groups, according as they show the predominating influence of H. Middendorffii, H. Dumortieri or H. flava. There are several others which give the appearance of the influence of some of the late-flowering species.

Apricot, one of the most charming horticultural sorts, is a hybrid long known to the trade which, by the type of inflorescence and shape of the flower, suggests its derivation from H. Middendorffii. It resembles this plant in all respects, but is larger, later, and of a paler colour. The foliage is deciduous. It spreads sparingly, but is easily divided, although there are no stolons; raised by Mr. G. Yeld.

Gold Dust, Orangeman, Flamid, and possibly Estmere, suggest crosses between H. flava and Dumortieri. All are vigorous in growth, producing dense tufts of dark green foliage with abundant overarching, somewhat branched inflorescences. The flowers resemble those of H. Dumortieri in general style, but are larger in all their parts. The leaves are deciduous, and there is no increase by stolons. Gold Dust will produce some seeds, but Orangeman is apparently sterile. The former is pale yellow with brown-stained buds; the latter is deeper orange in colour, with very little brown on the reverse. This absence of outer colouring makes a marked difference in the appearance of the clump in the garden, so that the flowers, although similar when near by, show quite differently in colour effect at a distance. The varieties Flamid and Estmere resemble these, but they are not offered in this country to the writer's knowledge. Tangerine, which was developed about the same time, is a more desirable sort and should be imported. Its chief asset is its deep-orange colour, which is not represented in any other variety flowering at this time.

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* By B. Y. Morrison, Senior Horticulturist, U.S. Bureau of Plant Industry. Reprinted, in substance, from Circular No. 42, U.S. Department of Agriculture, Washington, U.S.A.

Sovereign and Royal are the two sorts whose buds are stained with brown as in H. Dumortieri, but whose segments are broader and smoother, suggesting more the influence of H. flava. Both are charming and desirable plants, although somewhat similar. They are slightly scented.

The remaining forms, Ajax, Aureole and Queen of May, all carry larger, heavier flowers, such as are to be found in the late-flowering group. All are intense yellow. The first and the last are the more beautiful, whereas Queen of May is the last of the three to flower.

The Meehan Day Lily, another plant of unrecorded hybrid origin, received as Hemerocallis Meehani, follows these, and reaches its peak of flowering before the late-blooming group is at its height. In general appearance it suggests H. aurantiaca major, but its flowers are paler in hue and do not show the clear base of the petals. It is moderately free-flowering, but is valuable chiefly as a possible bridge between the early and late groups.

Several new sorts, flowering between seasons and developed recently in England, have flowered in the writer's garden. Of these the variety Queen Mary is, perhaps, the most conspicuous, resembling the variety Meehan, but having rather better form. Very tall-stemmed and striking is Gold Imperial, with large, pale-yellow flowers of rather starry form. Thelma Perry flowers late in June, with lemon-yellow, Lily-shaped blooms much like the later-flowering H. citrina hybrids. More like Gold Imperial, but distinct in its trumpet shape, is the yellow-hued Yellow Hammer.

There are others that flower between these last members of the early group and encroach on the season of the summer-flowering group. The most conspicuous of these is the large and very handsome variety George Yeld, named after the originator of many of the older sorts. Its colours are a rather brilliant orange over yellow, with red-orange patches on the three inner segments.

Late-flowering Garden Varieties.

The late-flowering varieties come into bloom in two groups that overlap considerably. In July, Florham, Sir Michael Foster and luteola, with its several varieties, are the chief contributors to the garden colour, but before they are over, the derivatives of H. citrina bloom and last through August and often into September. The earlier of these two sets contains, on the whole, the more brilliant flowers, but the second group is valuable for the unusual height of the flower stalks and the fragrance of the blossoms.

Florham is a variety of American origin which forms large clumps of half-evergreen foliage from which the stalks of flowers rise to a height of four feet or more. The flowers are large and of fine form, with ruffled segment edges. They are sweetly, but not strongly, scented. Florham should be increased by division.

Sir Michael Foster is a cross between H. aurantiaca major and H. citrina and bears the largest flowers of all. They are huge, starry trumpets of delicate empire to apricot yellow. The plant is half- evergreen, produces no stolons, and is rather slow of increase.

Luteola is the name given to a hybrid of H. Thunbergii × H. aurantiaca major, while luteola major is the result of the reciprocal cross. The two plants are much alike, similar to Florham except for the deeper colour of the flowers, but perhaps a little less fine. Luteola pallens, a cross between H. citrina and H. Thunbergii, and luteola grandiflora are less happily named, for they differ from luteola far more than the names might suggest. The first is more starry in shape than either of the first two and does not reach to great a height. Luteola grandiflora is somewhat finer than the others, and the shape of the flowers suggests that of H. fulva or H. aurantiaca major, rather than the more trumpet-like luteola. But whatever the reasons for grouping, the four make excellent garden plants, especially when they are well developed.

During July also blooms the H, fulva hybrid known as Maggie Perry. It very much resembles H. fulva cypriana in colour and form and differs from the typical H. fulva only in its darker red colour and the sharply defined yellow bases of the petals. It is valuable chiefly in extending the colour range of the family in the darker hues.

While these are still in full bloom, the first flowers of ochroleuca, Baronii, Lady Fermoy Hesketh, and the unnamed hybrids of H. citrina, offered in at least one strain, commence to open.

Ochroleuca and Baronii are products of the same cross and are very similar. The first is the better of the two, with larger flowers slightly more expanded. It increases very rapidly and appears to bear transplanting better in the spring than in the fall. Both are hybrids from H. Thunbergii × H. citrina, and both are evening flowerers. Lady Fermoy Hesketh very closely resembles H. citrina itself, but opens in the morning and has rather broader perianth segments. It has a very long flowering season. The "citrina hybrids" known to the writer are all very tall plants, some being fifty inches high, with rather small, starry flowers of pale greenish-yellow. Some open in the evening and some are day flowering. All are delightfully scented, as are the other citrina hybrids. The foliage is entirely deciduous, and there are no stolons. Although there has been no published statement, certainly H. Thunbergii must gave been the other species involved. They produce a large number of flowers on a stalk and, as they commence to flower late, are valuable for continuing the season of bloom. Another plant, obtained under the name Globe d'Or, obviously belongs to this section, although the writer has been unable to obtain any history of the plant. It blooms in the evening and is of no special value, save for the lateness of its season of flowering.

Hybrids Under Trial.

There are numerous plants, some named and under trial and others not yet introduced, which will undoubtedly add to the value of this family. Dr. Stout's work has already been mentioned. Amos Perry in England has made numerous additions to the variety list; Carl Betscher has important sorts to introduce, and several amateurs are at work in this country.

As might be expected in so small a group, the improvements will have to be critically studied, and the variations that may arise in the limited range of colour, size, form and time of flowering will have to be well marked to be worthy of consideration.

Value as Garden Plants.

The writer's interest in Yellow Day Lilies developed from the use of the early-flowering sorts to supplement the yellow varieties of Iris in mixed perennial borders where the brilliance of their colours is of great value in contrast with the delicate lavenders and purples of the Irises, and their arching, grassy leaves accentuate the erect, sword-like thrust of the Iris leaves. They show as desirable contrasts with the leaves of Phlox, Funkia, Delphinium and Paeony, and make valuable additions to the foliage textures of the border.

The range of this colour, however, from pale yellow to intense reddish-orange, presents some difficulties. As suggested in *Farmer's Bulletin* 1406,* the Yellow Day Lilies should not be planted near the mauve and pinkish Iris varieties, nor near the deep-coloured Paeonies. Where they overlap the season of the early Delphiniums or any of the white flowers of the border the effect is delightful. The same conflict with mauve must be borne in mind for the season that produces both Phlox and Monarda. The whites and palest pinks of Phlox are very charming near the pale sulphur forms like H. Thunbergi and the various citrina hybrids, but the deep purplish colours in Phlox and the intense reds of Monarda work havoc with the yellows and orange of the Day Lily.

The summer-flowering forms are of the greatest value to the garden designer for their height, many of the stalks rising to more than four feet even in rather dry soils. A good-sized clump of these slender Reed-like, stems rising from the clump of arching foliage and crowned with myriads of pale-yellow, Lily-like flowers, becomes a notable feature of the summer border. Planted in large masses near shrubbery groups of Buddleias, Hibiscus and summer-flowering Hydrangeas, they make desirable features in naturalistic plantings.

THE GENUS PRIMULA.

(*Continued from p.* 66).

JAFFREYANA (King). Jaffrey's P.

(Obtusifolia.)

A smooth or slightly mealy perennial species with a tuft of thin, blunt leaves with egg-shaped blades, tapering to a short, winged stalk, in all from one to one-and-a-half inch long; margins rather sharply toothed. Flower stem two to four inches tall, bearing an umbel of six to eight pale purple blossoms. Corolla flat, nearly three-quarters-of-an-inch across, divided into five broadly heart-shaped, notched lobes; tube cylindrical below, expanded towards the mouth, about twice as long as the calyx.

This species is found in damp situations in the Chumbi valley, in the Sikkim Himalayas, at about 12,500 feet above sea-level.

Culture: Plant it in good friable loam, in a cool, half-shady spot.

JAPONICA (A. Gray). Japanese P.

(Candelabra.)

The wild type of this well-known perennial is quite free from meal, with the exception of the calyx; it produces a tuft or rosette of thin leaves, with egg-shaped, oblong, blunt blades, tapering to a winged stalk dilated at the base, in all from four to six inches long; margins sharply and irregularly toothed. Flower stem nine to twenty-four inches tall, bearing several superposed umbels of numerous purple, rarely rose or white, blossoms. Corolla one to one-and-a-quarter inch across, with flat, broadly heart-shaped, notched lobes; tube about five-eighths-of-an-inch long, dilated upwards, with a ring in the mouth. *Bot. Mag.*, t. 5916. Introduced in 1871.

Grows in damp or swampy places in the mountains of Japan, in the islands of Yesso, Hokodate and Nippon.

Culture: It delights in rich, somewhat heavy loam, in a moist shady spot; although perennial, it should be raised frequently from seeds.

JESOANA (Mig.). Yesso P.

(Cortusoides-Geranioides.)

A Japanese perennial species of no great beauty, with a tuft of membranous leaves with rounded, heart-shaped, somewhat pointed blades about two-and-a-half inches across, on slender stalks three to six inches long; margins sharply toothed and fringed with short, bristly hairs. Flower stem nine to twelve inches tall, usually bearing two superposed umbels of two to four reddish blossoms, on stalks about five-eighths-of-an-inch long. Corolla funnel-shaped, rather small, divided into five wedge-shaped or broadly heart-shaped lobes; tube cylindrical below, dilated upwards, about twice as long as the calyx. Illustrated in *Notes from the Botanic Garden, Edinburgh*, 1913.

Grows in damp, shady places in elevated localities, in the island of Yesso, Japan.

Culture: Loam and leaf-soil, and a cool, shady spot, are indicated.

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* Morrison, B. Y. *Garden Irises.* U.S. Dept., Agr. Farmers' Bulletin, 1406, 46 pp., illus., 1926.

jonarduni (W. W. Sm.). Jonarduni's P. (Dryadifolia.)

A beautiful, minute, perennial species with a woody root-stock divided into numerous branches clothed with old and new leaves, forming mats six or more inches across. The close, crowded rosettes of fleshy leaves have nearly square blades about one-eighth-of-an-inch long, on winged stalks equalling or somewhat shorter than the blade; margins involute, with a notch on each side of the rounded tip; upper surface sparsely clothed with very short hairs, underside coated with meal. Flower stem very short, bearing a solitary, rose-crimson blossom immersed in the rosette of leaves. Corolla about five-eighths-of-an-inch across, flat, with egg-shaped, deeply notched lobes; tube cylindrical, about a quarter-of-an-inch long. Flowers in June.

Grows in dense mats on rocks and slopes in exposed situations, on Doshong La, in south-eastern Tibet, at 12,000 to 13,000 feet above sea-level.

Culture: Good, fibrous loam, peat and limestone chips, and a well-drained, open spot, with protection from damp in winter, are the conditions required.

juliae (Kusnez.). Julie's P. (Vernales.)

This richly-tinted Caucasian species is becoming a deservedly popular garden plant. It is of close, tufted or spreading habit, and produces short, stolon-like shoots from the central rootstock, these root at the nodes and give a ready means of increase. The leaves, which are numerous, are kidney-shaped or rounded, heart-shaped at the base, one-and-a-quarter inch to two inches long, on slightly winged stalks up to three inches in length; margins wavy and bluntly toothed. Flower stem obsolete. Flowers on slender stalks up to three inches long; these curve outwards from the centre of the plant. Corolla deep rosy-purple, one-and-a-quarter-inch across, divided into five oval, shallowly notched, slightly recurved lobes; tube cylindric below, narrowly funnel-shaped upwards. Flowers in March and April. *Gard. Chron.*, 1912, Vol. LI, p. 293, Fig. 142. Introduced in 1911.

Grows in shady places in the Caucasus.

Culture: The plant is not particular as to soil, but thrives best in deep loam and leaf-soil in a cool, half-shady spot. *A. W. Darnell.*

(To be continued.)

NOTICE OF BOOK.

Flowers of Kashmir.

Except that the derivation and meaning of the botanical names has been included in it, as for example, in the case of Hypopithys lanuginosa, of which the generic name is derived from *hypo*, under, and *pitys*, Pine tree, and the varietal name means woolly, the second volume of Father Blatter's enumeration of Kashmir plants* follows the lines of the first volume, which was reviewed in our issue of January 28, 1928 (Vol. LXXXIII, p. 67). As Mr. F. J. Mitchell, at whose request Father Blatter agreed to undertake the enumeration after Professor F. Hallberg's death, always wished that it should be for popular use, the concession to those whose botanical education has not gone beyond a certain point will be appreciated, and might be more generally followed in books of the same type.

As those who know the Himalayan flora would expect, the Gentian genus is well represented in this volume by no fewer that twenty-one species, as well as two others of questionable novelty. Several of these Kashmir species have baffled cultivators here, but that beautiful plant, G. Kurroo, which is possibly the pick of the Western Himalayan section, made itself happy for several years in Mr. Hiatt Baker's garden at Almondsbury, on the shore of the Bristol Channel. The species is now in cultivation again from seeds sent here by order of the Maharaja of Kashmir, and we may hope it will soon put the colours of its portrait on Plate 41 to shame, for they do not do the plant justice. Although there is no illustration in the second volume to compare with the Plate of Meconopsis aculeata which had the place of honour in the first volume, there is no lack of plates. The drawings, generally, by Mrs Wathen and Haldar Joo Walli, are more life-like than the colours, which suffer the limitations inevitable to photographic reproduction in three colours, and the figure of Gaultheria tricophylla on Plate 37 is a capital instance. Even at 13,000 feet, the fruit of this pleasant little species could hardly reflect the coerulean mantle in such brilliant fashion. On the other hand, the petal colour of the diminutive figure of Ixiolirion montanum on Plate 59 has been happily caught. The reader might be excused for rubbing his eyes on finding this Syrian plant included in a Flora of Kashmir. It is common in fields about Srinagar, and is an introduction to the country. Although the critical eye notices the omission of North America from the countries included in the geographical distribution of Moneses uniflora, errors and omissions are rare.

GARDEN MANURES FOR FEBRUARY.

In the use of manures, either natural or artificial, it is necessary to consider not only the original physical properties of the soils in question, but also the physical effect of the use of various manures on them. The physical condition of a soil is a highly important factor in plant nutrition and, although this phase of soil ethics frequently receives scant attention, it may be stated with emphasis that no system of manuring can give the highest degree of satisfaction which does not take into consideration its relationship to the physical conditions prevailing. Soils differ widely from each other in their physical properties. Some geological formations yield soils of high average fertility, while others yield inferior soils; some are wet and consequently cold, while others are dry and relatively warm; some are easily worked, others are exceedingly tough; and some are easily burnt up through drought, while others maintain a thriving herbage through the most trying conditions. Successful gardening depends on the cultivation and production of crops from all these types of soil, and it is obvious that no "cut and dried" system of manuring can be equally applicable to them all. The modern practitioner owes the modern chemist much, but it may also be stated that the complete success of the chemist's products is largely in the hands of the practitioner.

The physical nature of a soil depends on the proportion in which its proximate ingredients, sand, clay, lime, vegetable matter and mineral fragments, are present. Whatever the geological derivation of a soil, it will be found that all fertile soils are thus constituted, the quality depending, to a large extent, on the proportion in which these ingredients are mixed together.

Pure sand cannot be stated to be in any sense a plant food, but it acts as a divider or opener of the soil, facilitates the percolation of water and penetration of air, renders more easy the passage of roots in search of plant food, confers a degree of warmth on soils, first by accelerating drying, and secondly, from its inherent power of retaining warmth, and renders the soil easier of tillage; therefore it plays a very important part in the great and comprehensive work of plant nutrition. A calcareous sand simply means a sand in which particles of lime—it may be shells, or chalk—abound; many sea sands are of this nature, and besides giving the services above enumerated, also act as a source of lime.

The purest forms of clay are exceedingly plastic in character, to which property they owe their value as a material for making bricks and pottery; but this property is of equal importance in horticulture. In nature, however, clay is almost invariably associated with potash, soda, lime, ferric oxide, magnesia and carbon dioxide, and these render it more valuable as a soil constituent than if it were pure. It is partly in consequence of their presence that a clay soil is often relatively rich, and that clay ranks among the most valuable constituents of soil. It helps to maintain fertility by the introduction of valuable mineral food constituents; gives a certain consistency favourable to the retention of moisture, and favours capillarity when well worked, thus enabling a soil to resist drought.

Lime is an important constituent of all fertile soils, and besides acting as a chemical re-agent, it is in itself a plant food. It exerts a strong effect on decaying vegetable matter by accelerating its resolution into carbon-dioxide, ammonia and water; it also combines with vegetable acids and forms, with them, neutral lime-salts no longer injurious to plant life, and it has an important effect on the mineral matter of the soil by decomposing the silicates and setting free their alkalies, thus acting on both the organic and inorganic constituents of soils. Lime acts mechanically by improving the texture of clay soils, making them more friable, and, being of intermediate tenacity, it is also able to confer a higher degree of consistency on light soils.

Vegetable matter has accumulated in all cultivated soils, and although a soil may be temporarily rich without it, as proved by the fertility of lava soils, it is a highly important constituent for the maintenance of permanent fertility. It results in the formation of humus and is constantly in a state of decay or slow combustion, which is never completely arrested until it is reduced to a condition of pure carbon. Humus is not assimilated directly by plants, but it is valuable as a perpetual source of carbon-dioxide, and in a less degree, as a source of nitrogen. Its gradual decay maintains the interstitial atmosphere rich in carbon-dioxide, and impregnates the rain, which penetrates the soil, with the same ingredient. In this manner it becomes useful in the nutrition of plants and at the same time assists in that slow digestion which liberates insoluble matter from the soil and renders it fit for the use of the plant. Without it a soil would be light in colour, powdery, dry and harsh to the touch; with it, it becomes dark in colour, cool, moist and mellow, and in every way better fitted for the growth of plants.

Mineral fragments in the shape of stones, might, at first sight, appear rather as intruders than as legitimate constituents of a soil, yet they form a not unimportant component part. Their precise nature will depend on the origin of the soil; we expect to find water-worn pebbles in an alluvial deposit or drifted soil; in an oolitic limestone, irregular fragments given up from the rock beneath; and in a chalk soil, flints. They always modify the character of the land, and many soils now worked as light lands would be unworkable clays were they not divided up by countless stones. It is also important to bear in mind that these undecayed fragments are capable of yielding fresh mineral food for plants under the influence of warmth, moisture and chemical reactions. A time must come when even the largest will crumble down and we may thus regard the mineral fragments as a reserve magazine of mineral plant food. *W. Auton.*

FOREIGN CORRESPONDENCE.

COLOUR CHARTS.

Referring to the "Colour Chart" of which your correspondent, Percy E. Chappell, Major, writes in *The Gardeners' Chronicle* of December 1, he may be glad to know that we have in France a repertory of colours of a very complete kind, which is known by the name of *Oberthür's Repertory*, and is published by the Société des Chrysanthemistes and the Société Nationale d'Horticulture. I do not know whether the work is on the market. In any case, it would be easy to ascertain. *Eugène Meunissier, Ville Pamplemuosse, Avenue des Chalets, Avignon (Vse).*

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* *Beautiful Flowers of Kashmir*, Vol. II., by Ethelbert Blatter, S.J., Ph.D., F.L.S. London, J. Bale, Sons and Danielsson, Ltd., 1928. Price 21s. net.

HOME CORRESPONDENCE.

Gardeners' Pay and Status.—On p. 51 of your issue of January 19, your correspondent, *B. C.*, writes with a view to a possible discussion regarding the low rate of pay and equally low status obtaining in the gardening profession. I think this subject is discussed often, wherever professional gardeners meet, but, unfortunately, never gets beyond the discussion stage. It has often struck me as rather singular that, while all professions have their guilds and associations to protect their interests, we of the gardening profession have nothing of the sort really worthy of the name. I, personally, would like to see some kind of guild or association (non political) embracing the whole of the trained professional gardeners in the British Isles. *B. C.* states he has heard and seen much to discourage him; he will see and hear much to discourage him in whatever line he decides to take up, but if he has strong inclinations towards gardening, he should certainly take it up, try hard to overcome the obstacles, and leave the profession better than he found it. *J. Batty, The Gardens, Tyn-y-Coed, Llanrhos.*

Partial Soil Sterilisation.—Since my notes in *The Gardeners' Chronicle* for December 22, 1928, (p. 494), I have had several enquiries as to the best type of boiler for providing steam; and for the benefit of any one who may be desirous of purchasing a steam boiler, I would recommend the vertical type, which may be purchased second-hand from any boiler-maker, at prices to suit all requirements, but it would be necessary to make sure that the boiler chosen could be depended upon to develop pressure up to 70 lbs. per square inch. I have recently seen, in a parks department, such a boiler which is entirely satisfactory, and was supplied by Messrs. Thos. W. Ward, Ltd., Albion Works, Sheffield. This firm specialises in this type of work, and is in a position to furnish detailed particulars. I may also state that Messrs. Jones and Attwood, Ltd., of Stourbridge, have placed on the market a machine which they call the "Sterilatum," and which would possibly meet the requirements of those who are not prepared to erect a plant such as that described in my previous notes. This machine is composed of an oblong receptacle which holds several barrowloads of soil, with a space at the bottom for the water to produce steam, and a furnace underneath; it is set on three wheels so that the apparatus may be moved about conveniently. This soil steriliser was illustrated in the issue of the *Fruit Grower* for January 10, of this year. I used such a machine before I adopted the quicker method of employing a steam boiler, and am so satisfied with results, that I fully endorse the statement in the Ministry of Agriculture's leaflet, No. 209, which reads: "Soil sterilisation is no longer regarded by growers of glasshouse produce as an expensive luxury, but rather as a form of insurance and part of the year's work" (and I treat it as such), which leads me to congratulate your correspondent, Mr. L. J. Moore (p. 35), on his enterprise in constructing his own apparatus, and passing on the details of it to others. It was hardly necessary for your correspondent, John Butler (p. 35), to remind us that the subject of soil sterilisation is not new to him. There is a saying that there is nothing new under the sun, and doubtless many of your readers will remember the days when the antiquated method of sterilising a small quantity of soil for the sowing of Fern spores was conducted over the stoke-hole fire; but thanks to the energies of our scientists and big market growers, methods have been improved. Gardeners, especially, should keep abreast of the times, and because a certain method was employed twenty years ago, it is no reason why up-to-date and better methods should not be adopted. May I state that steaming as a means of partial sterilisation of the soil has become a general practice with most of the big market growers, and I fail to see how the present-day methods are at all complicated; on the other hand, gardeners who bake their soil often regret the fact that six weeks have to elapse before it can be used. Men of wide experience have told me that while baking of the soil is certainly preferable to not sterilising it at all, there is no comparison between properly steam-sterilised soil, and that which is baked; having tried all the known methods, I am convinced that the steaming method is the best, and not an expensive luxury for the few. *A. Falconer.*

VEGETABLE GARDEN.

WINTER GREENS.

It is the usual practice to dig deeply and manure fairly heavily the ground used for Brussels Sprouts and other winter greens. Thus, after a wet and frosty winter, many gaps are left in the Broccoli bed; a very great percentage of the sprouts are open, and the crops in general are not very satisfactory.

About four years ago, because a number of alterations had to be made in the grounds, the digging had not been done when the busy spring season was upon us. The Brussels Sprouts were ready for planting out, for I had sown them in February, and later they had been pricked out into a cold frame. The ground was too hard to allow putting them in with a trowel, so we planted the Brussels Sprouts with an old, worn spade, in the same way that small shrubs are planted. Previously, manure had been spread over the entire ground. Broccoli and the Kales were planted in due course, one person making a hole in the ground with a small crowbar, and another following with the plants and heeling them in well.

The result was that I had the finest crops of Brussels Sprouts and Broccoli that I had ever grown or seen. There were no open "buttons"; all were firm, and we were able to gather them up to the beginning of April. The Broccoli (both the winter and the spring varieties) turned out remarkably well, and no plants were lost.

Since then, the ground I have used for winter greens has never been dug in preparation for them. They are planted where Beans or Peas have been grown previously, after manure has been spread widely, and are earthed up when necessary. I still continue to obtain excellent crops, and the enclosed is a sample of this year's Brussels Sprouts. They are Dickson and Robinson's "Exhibition," and if there is a fault that can be found with them, it is that they are too large. *T. Bradley.*

[Judging by the sprouts received, which were of large size and in splendid condition, Mr. Bradley is an extremely successful cultivator of Brussels Sprouts.—Eds.]

THE CANSON SPROUTING BROCCOLI.

When September arrives, there is frequently a shortage of Peas, and if the weather is warm, the Cabbages and similar vegetables are not tempting. Beans should be plentiful, but Cauliflowers are not available in small gardens, therefore a new vegetable for this season is well worth a trial. The newcomer is the Canson Early-flowering Sprouting Broccoli, an autumn or late summer variety that forms a central head about three to four inches across, and after this is cut, side-shoots form smaller heads. The stems on which these heads form are very tender and stated to be almost as desirable as the heads themselves. The colour of the heads is a peculiar dull bluish-green. The flavour of this new Sprouting Broccoli is described as soft and delicate, suggesting Asparagus rather than Cabbage or Cauliflower. Messrs. Cannell and Sons, Loddon, Norfolk, the introducers, are so convinced that once this new vegetable is tried larger quantities will be required, that they are offering to send absolutely free small samples (sufficient to raise about fifty plants). A card, addressed to Messrs. Cannell and Sons, Loddon, Norfolk, asking for one of these packets, will bring the seeds and full particulars, and enable growers to test the novelty. It is stated that this new early-sprouting Broccoli is easily grown, needing about the same kind of cultivation as autumn Cabbages.

SOCIETIES.

THE ORCHID CLUB.

At the meeting of the Orchid Club, held on January 25, there was an excellent display of Cypripediums and Odontoglossums and a few fine Dendrobiums. A special feature of the Cypripediums was the large number of new hybrids, of which several received recognition from the adjudicatory Committee.

Premier Diploma.

Cypripedium Melody var. Vega.—A large flower of excellent form and colour; the orbicular dorsal sepal—three-and-a-quarter inches across—is white, with a bright green luna broken by crimson blotches, and marked in the central part by confluent crimson-purple blotches; the petals and lip are of perfect form, mahogany-red, margined with yellow.

Diplomas of Merit.

Cypripedium Maori (*C. Thisbe-Beckton* × *C. Budhoni*).—A large flower of excellent shape; the dorsal sepal somewhat square in form, three-and-a-half inches across, white, with scattered crimson-purple spots and a small green luna; the horizontal petals and well-shaped lip are green, shaded with crimson.

Cypripedium Mena (*C. Thisbe-Beckton* × *C. Chrysostom*).—A large flower, very similar in general characters to the foregoing C. Maori, but differing in the much greater breadth of the well-displayed petals. The foregoing plants were shown by Dr. Craven Moore.

Cypripedium Golden Dawn.—A medium-sized flower of a pleasing shade of green and white; the round dorsal sepal is green, with a broad band, the petals and lip are well-formed and of a soft green colour; there is an entire absence of spots. Shown by Mr. Ingham.

Cypripedium Mist o' the Moon (*C. nitens-Leeanum var. Becktoniae* × *C. Desdemona*).—A medium-sized flower of excellent shape; the dorsal sepal, oval in form, is white, the margin being slightly goffered, and marked in the centre with vertical rows of yellowish-brown spots; the petals and lip are pale green shaded with brown, and are or perfect form. Shown by Mr. A. T. Cussons.

Groups.

Sir William Thom (gr. Mr. Williams), showed a highly interesting collection of Cypripediums which included about a dozen new seedlings flowering for the first time; among these a brightly coloured form of C. Mary Thom looked promising for future distinction. The chaste C. Atholii carried a beautiful flower.

A. T. Cussons, Esq. (gr. Mr. Dalgleish), had an extensive group comprising Cypripediums and Odontoglossums in excellent cultural condition. Examples of the finest forms of C. Maudiae and C. Memoria var. F. M. Ogilvie, C. Lucifer and C. Roundhead were relieved from formality by beautiful spikes of Odontoglossum crispum and various hybrids; also worthy of note were fine examples of C. sublaeve and C. Bullenianum, a section for which Mr. Cussons professes much enthusiasm.

Dr. Craven Moore (gr. Mr. Gilden) staged a large group of highly decorative quality. Specially fine forms of white Odontoglossum crispum and O. Promerens var. xanthotes were associated with brilliantly coloured forms of Odontioda Collinge, O. Maureen, O. Marina and O. Joiceyii. The Cypripediums included large plants of C. Viking, with five flowers, and C. Corsair, with four, and C. Noel Hardy had four large yellow and white flowers, and there were excellent forms of the brilliant C. Melody, C. Makeda and C. Memoria J. H. Walker. Well-flowered plants of Dendrobium Lady Colman, D. Gatton Monarch and D. Discus completed a very pleasing exhibit.

B. J. Beckton, Esq. (gr. Mr. Stewart), exhibited a selection of high-class Cypripediums along with certain Masdevallias; of the latter a well-flowered plant M. polysticta was specially noteworthy. C. Ingham, Esq., showed some good Cypripediums, including a fine form of C. calloso-Veitchii, together with a few Odontoglossums. F. T. Paul, Esq., showed Cypripedium Perseus, C. Chrysostom var. Conyngham, and others, in excellent form.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

THE eighty-ninth Annual General Meeting of the subscribers to the above Charity was held at the Connaught Rooms, Great Queen Street, London, W.C., on Thursday, January 24. It was announced in the notice convening the meeting that Leonard Sutton, Esq., would take the chair, but as he was unable to be present his place was filled by Mr. Donald McDonald. Mr. E. Sherwood, Hon Treasurer, through illness, was unable to attend, but it is pleasing to record that Mr. George J. Ingram, the Secretary, was sufficiently recovered from his protracted and severe illness to be present.

Among those present at the meeting were :—Messrs. David Ingamells, Peter R. Barr, W. O. Hiehle, P. G. White, Ralph Bond, A. Dawkins, H. G. Alexander, J. Linford, A. C. Bartlett, Arthur Dye, A. Bullock, and Major E. G. Monro ; Sir Bignell Elliott was represented.

Following a short speech by the Chairman, in which he congratulated Mr. Ingram upon his recovery to good health, the Secretary read the minutes of the last Annual Meeting, and upon these being approved, presented the Annual Report, together with the statement of accounts. Extracts from the Report are appended, together with the Balance Sheet.

EXTRACTS FROM THE REPORT.

In submitting its Annual Report, together with a statement of receipts and expenditure (as audited) for the year 1928, the Committee desires to express its thankfulness that the continued liberal support it has received has enabled it to carry on the well-known work of this national horticultural charity, which has been so beneficial in affording assistance to aged and distressed gardeners, nurserymen, etc., and their widows, for the past ninety years.

At the beginning of the year there were 255 persons—men and widows—in receipt of annuities. During the year, eighteen of these have died, five of whom leaving widows, who, being eligible and in every way deserving, were placed on the funds for the widow's annuity, without election, under Rule III, 13, thus leaving at the end of the year 242 annuitants. There are now thirty-six approved candidates—twenty-three men and thirteen widows—on the list of the coming election, of whom the Committee recommend that twenty be elected this day by the votes of subscribers, which will increase the beneficiaries to 262, the largest number ever on the funds of the Institution, but, although adding to its liabilities in assisting more of those who are in such need of help, the Committee feels confident that its action will receive the approval of every well-wisher and subscriber to the Charity. Notwithstanding, there will remain sixteen candidates who must await another election before they can be placed permanently on the funds ; happily these will be given assistance from the Victorian Era Fund and the Geo. Monro Fund. During the past year, twenty persons were given grants from these two sources, while the Good Samaritan Fund gave temporary help in twenty-three cases of distress and pressing need.

The eighty-third Annual Festival Dinner, in aid of the funds, held at the Savoy Hotel on June 28 last, proved most successful.

The Committee acknowledges its great indebtedness for the services rendered by the promoters of concerts, entertainments, etc., among whom they gladly mention Mr. Charles H. Cook, of the Royal Gardens, Windsor ; Mr. Thomas H. Cook, Sandringham ; Mr. W. Auton, Woking ; the Hon. Secretaries and members of the Worcester and Liverpool Auxiliaries ; and the Altrincham and District Gardeners' Improvement Society, so well as others whose efforts on behalf of the cause have materially augmented the funds. They tender, too, their grateful thanks to His Grace the Duke of Devonshire, the Earl of Beauchamp, the Lord Northbourne, the Viscountess St. Cyres, the Lady Battersea, C. Dyson Perrins, Esq., J.P., and Roger J. Corbet, Esq., J.P., for again permitting their beautiful gardens to be opened to the public for the benefit of the funds. Very gratefully do the Committee acknowledge the valuable and appreciated services given so freely by the Hon. Secretaries and other Hon. Officers of the several Auxiliaries which continue to be a source of strength, not only financially, but in sustaining and increasing an interest in the work. From the Worcester Auxiliary alone no less a sum than £8,099 has been raised since its foundation in 1895.

It is with very deep regret the Committee has to refer to the large number of deaths among the friends and supporters of the Charity in the past year. They would especially allude to the Rt. Hon. Lord Lambourne, a Vice-President and Chairman at the seventy-seventh Anniversary Festival Dinner in 1922 ; Sir J. Agg Gardner, M.P., Sir Charles Metcalfe, Messrs. Francis Robinson (Manchester), W. H. Massie, W. H. Page, G. H. Strutt, J. Lloyd Graeme, Edwin Hiller, P. A. Ralli, Will Taylor, J. Bolton, Mrs. Leveson Gower and Mrs. Charles Edwards, who had been an annual subscriber for fifty-four years.

The Committee earnestly appeals for a continuance of the generous aid given to it in the past, so that the beneficent work which has been carried on for such a long period may be in no wise curtailed.

The Committee is very happy to be able to announce the recovery of their esteemed Secretary, Mr. George J. Ingram, from a long and severe illness which occurred immediately after the Festival Dinner, and which may be largely attributed to the strenuous work in organising and making the festival again such an entire success. Mr. McDermott, who has for many years given help in the secretarial work, has been appointed Assistant Secretary, and he, together with the Vice-Chairman, Mr. Donald McDonald, have successfully carried on the beneficent work of the Institution during the latter half of the year.

LEONARD SUTTON,
Chairman of Committee.

GEORGE J. INGRAM,
Secretary.

The Chairman, in proposing the acceptance of the Report and Balance Sheet, thanked the Committee on behalf of the meeting for the manner in which the business of the Institution had been conducted during the past year. He also spoke of the loss sustained by the Institution through the deaths of several prominent subscribers, especially the late Lord Lambourne. The Report and Balance Sheet were accepted without comment by the meeting, which then proceeded with the formal business of re-electing the Secretary, Mr. George J. Ingram ; the Hon. Treasurer, Mr. E. Sherwood, J.P. ; the Hon. Solicitors, Messrs. Ralph Bond, Veitch and Bilney, and the Auditors, Messrs. George Cobley and Co. ; the retiring members of the Committee were re-elected *en bloc*.

Major Monro, Mr. David Ingamells and Mr. Percy White were appointed Scrutineers, and the meeting then adjourned for the scrutiny of the ballot, the result of which was declared at 4.20 p.m. The successful candidates, with the number of votes secured by each, were :—Mrs. M. E. Warren, 5,956 ; Mr. R. W. King, 4,809 ; Mr. John Lambert, 4718 ; Mr. W. Slyfield, 4,262 ; Mr. J. Head, 4,135 ; Mr. J. Hall, 3,503 ; Mr. G. A. Bignell, 3,425 ; Mr. G. W. Shelton, 3,423 ; Mr. A. Bott, 3,249 ; Mr. C. Griffin, 3,031 ; Mr. G. Southcott, 2,667 ; Mr. A. J. Hancock, 2,428 ; Mr. W. Packham, 2,369 ; Mrs. Sarah J. Hale, 2,338 ; Mr. A. J. Denham, 2,223 ; Mr. J. Lane, 2,213 ; Mrs. C. J. Fletcher, 2,196 ; Mr. J. H. Marshall, 2,080 ; Mr. J. S. Davies, 2,042, and Mrs. E. Andrews, 2,014. There were 83,525 votes recorded, a reduction of about 15,000 on last year's total. The meeting granted the Theodora Kay Annuity to Mrs. Ann Davies.

Votes of thanks were accorded the scrutineers and the Chairman, and this concluded the proceedings.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION GENERAL FUND

FOR THE YEAR ENDED DECEMBER 31, 1928.

RECEIPTS.

	£	s.	d.	£	s.	d.
To Balance at Bankers, January 1, 1928	1,371	2	2			
Balance on Deposit, January 1, 1928	1,900	0	0			
Cash in hand, January 1, 1928	6	15	6	3,277	17	8
Annual Subscriptions ...	1,115	18	0			
Donations and Legacies ...	2,408	19	10			
Theodora Kay Annuity ...	36	0	0			
Dividends and Interest ...	1,512	1	5			
Income Tax Refunded for 1926-7	174	5	4	5,247	4	7
				£8,525	2	3

PAYMENTS.

				£	s.	d.	£	s.	d.
By Annuities and Gratuities ...							4,433	16	8
Rent, Fuel, Lighting and Remuneration of Secretary and Clerk				705	3	5			
Expenses of Annual Meeting and Election ...				5	6	2			
Printing and Stationery	£167	15	7						
Less Advertisements ...	46	16	6	120	10	1			
Advertising—Fry's Charities				2	12	6			
Cheque Books				13	1	8			
Postage, Reports, Polling Papers, Appeals and ordinary...				52	15	1			
Telephone Charges ...				10	6	6			
Carriage, Telephones, Typing, etc.				11	0	6			
Auditors' Fees				10	10	0	1,021	14	11
TOTAL							5,455	11	7
Balance at Bank, December, 31, 1928				1,149	3	2			
Balance on Deposit, December 31, 1928				1,900	0	0			
Cash in hand, December 31, 1928				20	7	6	3,069	10	8
TOTAL							£8,525	2	3

NOTE.—£1,150 will be required to meet the quarterly payments due on December 31, 1928.

The Income Tax Refund for 1927-28 has not yet been received.

WE have examined the attached accounts of Receipts and Payments with the books and vouchers, and we certify that to the best of our information they are correct.

We have also verified the investments and the bank balance of the Institution.

(Signed) GEORGE COBLEY & CO.,
Chartered Accountants (Hon. Auditors).

NATIONAL CARNATION AND PICOTEE.

THE above Society's fiftieth annual general meeting was held on January 19, at 95, Belgrave Road, Victoria, S.W. 1. (by kind permission of the London School Gardening Association). There was a large attendance of members.

The Committee's 1928 report disclosed a satisfactory state of affairs, the membership having increased during the year by seventy, and the balance in hand being over £50, as against £30 the previous year. In conjunction with the British Carnation Society, a combined exhibition was held at the R.H.S. Hall, London, on July 19 and 20, which was an outstanding success and reflected much credit upon officials and exhibitors alike. Thanks to the happy relationship existing between the two Societies, a similar combined show will be held in the R.H.S. Hall this year on July 18 and 19. Innovations in the 1929 schedule include new classes for Fancy Carnations (other than white or yellow ground) and hardy border Pinks. The best thanks of the Committee were accorded to all exhibiting members.

The retiring President, Mr. Edmund Charrington, was unanimously re-elected, and Miss Shiffner, Mr. James Fairlie and Mr. J. J. Keen (three of the Society's oldest and best-known exhibitors) were elected Vice-Presidents. Major George Churcher was appointed a Patron of the Society. The meeting regretfully accepted the resignation of the Hon. Secretary, Mr. E. G. Lowe, at the same time expressing its thanks to him for his whole-hearted efforts on the Society's behalf while holding that position. Mr. A. E. Amos was elected Hon. Secretary and Miss J. B. Wells was re-elected Hon. Assistant Secretary. The Committee vacancies were filled by the election of Messrs. S. H. Gregg, T. J. Child, E. G. Lowe, H. L. Flindt (London), and A. Reynolds (Birmingham).

ROYAL HORTICULTURAL.

January 29.—As at the previous meeting, the Horticultural Hall at Vincent Square, Westminster, was filled with exhibits of various kinds, and presented quite a gay and attractive appearance. There were several good collections of Orchids, in which long, graceful spikes of Oncidiums and Cymbidiums were prominent. The Orchid Committee recommended one Award of Merit to a novelty. The Floral Committee had fewer novelties than usual, and recommended only two Awards of Merit. The chief features of the various groups were greenhouse Cyclamens of considerable merit, a large and attractive group of spring bulbs, greenhouse Carnations, forced flowering shrubs and early border flowers. There were the exhibits of garden sundries and paintings customary at this season. Several seedling Apples were submitted to the Fruit and Vegetable Committee, but none was considered superior to the standard varieties. The only fruit exhibit in the hall was a collection of Apples from the Reading University Gardens, which was excellent from every point of view.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Frederick Hanbury, Mr. Lionel de Rothschild, Mr. Stuart H. Low, Mr. J. Wilson Potter, Mr. E. R. Ashton, Mr. A. Dye, Mr. H. G. Alexander, Mr. Fred. K. Sander, Mr. J. E. Shill, Mr. T. W. Taylor, Mr. Charles H. Curtis, Mr. J. Cowan, Mr. A. McBean and Mr. T. Armstrong.

Award of Merit.

Odontoglossum mirum aureum (*O. crispum* × *O. Wilckeanum*).—A beautiful Odontoglossum of soft yellow colouring, with a few brown markings. The flowers are of excellent form and good size, and admirably placed on a graceful spike. Shown by Messrs. J. and A. McBean.

Cultural Commendation.

To Mr. R. Cottam, gardener to G. Mayer, Esq., Wistler's Wood, Woldingham, for Cypripedium Leeanum var. Clinkaberryanum, carrying about thirty blooms.

To Messrs. Sanders, for a very fine plant of Oncidium Cavendishianum.

Groups.

Odontoglossums and Cymbidiums figured largely in the group set up by Messrs. J. and A. McBean, but the display lacked that groundwork and finish that generally characterises the Cooksbridge exhibits. A few of the leading subjects were Cymbidium Albania, C. Coningsbyanum, C. Carol, Epiphronitis Veitchii, Cattleya Tityus, Odontoglossum Cumbe, O. Adula, O. Rosina, Odontioda Bradshawiae, and Brasso-Laelio-Cattleya Cissie, of salmon-pink colour.

Messrs. Sanders contributed a fine group wherein their numerous examples of Oncidium splendidum were conspicuously good, while a big plant of O. Cavendishianum with a large, branching spike, arrested attention. Other good things included were Cymbidium rosefieldense, St. Alban's var., C. Erica Sander, good forms of Lycaste Skinneri, Calanthe Butterfly, Laelia autumnalis, Vanda Amesiana and Cypripedium Perseus.

A glorious spike of Odontoglossum crispum carrying eighteen lovely flowers of fine form, was the central feature of an exhibit staged by Messrs. Charlesworth and Co. Around this were grouped Oncidium anthocene—now rarely seen, the interesting Cattleya Percivaliana var. Charlesworthii, Odontoglossum Muralis var. rubens, of fine colour, and such good Cypripediums as C. Senator, C. Major Hanbury Carlile, and C. Halwellyn, with Miltonia Belyta.

A small group from Messrs. Stuart Low and Co. contained the brilliant Sophro-Laelio-Cattleya Beta, Cypripedium Maudiae, Cymbidium Joan, Masdevallia tovarensis, Odontioda Wilsonii, and the quaint Rodriguezia crispa. Mr. J. Evans showed some excellent Cypripediums, a few of the finest being C. aureola, C. Aleivanna var. Perfection, and C. Makeda var. Matador—of fine colour. A few Odontoglossums and Cymbidiums were included in this group.

Mr. Harry Dixon showed Dendrobium aureum, Cypripedium Roger Sander, Odontoglossum amabile and Cymbidiums.

Cymbidium Lucaste, Old Quarry var., pale yellowish-green, was shown by W. J. Burston, Esq., Haywards Heath; this is the result of a cross between C. grandiflorum and C. Warbler. The fine Cypripedium Renown, Dell Park var., exhibited by Baron Bruno Schröder, Dell Park, Englefield Green, was greatly admired.

Large plants of such old favourites as Calanthe William Murray and C. Veitchii, Cypripedium Ashburtoni, C. Lathamianum, and C. Leeanum, were shown by Lady Hadden (gr. Mr. O. Hayles), Rossway, Berkhamsted, and all were freely flowered.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mr. A. E. Vasey, Mr. C. F. Langdon, Mr. J. M. Bridgeford, Mr. D. Ingamells, Mr. M. C. Allwood, Mr. R. Findlay, Mr. Hugh Dickson, Mr. B. C. Long, Mr. James B. Riding, Mr. D. B. Crane, Mr. W. B. Gingell, Major George Churcher, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mr. G. W. Leak, Mr. Courtney Page, Mr. E. R. Janes, Mr. J. F. Smith (visitor) and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. W. J. Bean, Mr. G. Reuthe, Mr. F. G. Preston, Lady Beatrix Stanley, Mr. E. H. Wilding, Mr. C. Williams, Mr. Amos Perry, Mr. G. Yeld, Mr. A. Bedford, Mr. E. A. Bowles, Mr. L. R. Russell, Mr. W. G. Baker, Sir William Lawrence, Bt., Mr. Mark Fenwick, Mr. W. B. Cranfield, Mr. Charles T. Musgrave, Mr. R. C. Notcutt, Mr. R. W. Wallace and Mr. N. K. Gould, Secretary.

Awards of Merit.

Anthurium Rothschildianum var. Excelsior.—Nearly fifty years ago, on May 11, 1880, to be exact, the Floral Committee of the R.H.S gave an Award of Merit to Anthurium Scherzerianum Rothschildianum, which was described and illustrated in *The Gardeners' Chronicle* four days later. Anthurium Rothschildianum was raised by Mr. F. G. Bergman, gardener to Baron Rothschild, at Ferrieres; the spathe is decidedly larger than that of A. Scherzerianum, and is creamy-white, spotted with red. The spadix is usually yellow, although at times it is tinted with orange colour. The variety Excelsior has the general characteristics of A. Rothschildianum, but the spathe is much larger, more rounded, and the spadix is tinted with reddish-orange, and the brick-red markings are not so regular as in the illustration referred to above. Shown by Lionel de Rothschild, Esq. (gr. Mr. A. Bedford), Exbury, Southampton.

Carnation Kathleen.—This deliciously scented greenhouse Carnation is recommended for cutting and for market purposes. It is a medium-sized flower of good form, free-flowering habit, and of bright rose-pink colour. Shown by Messrs. Stuart Low and Co.

Groups.

A particularly good and extensive collection of greenhouse Cyclamens was tastefully arranged by Messrs. Blackmore and Langdon. A whole length of tabling, just inside the entrance, was filled, and not only did the many plants illustrate excellent cultivation, but most of the flowers retained the charm of the true Cyclamen shape. The principal varieties were Brilliant, Daybreak, Bath Pink, Giant White, Salmon King and Scarlet King.

At the end of the hall, Messrs. Sutton and Sons had a fascinating exhibit of spring bulbs. Mossy mounds were crowned with various Daffodils and Iris tingitana and on the sides were Hyacinths, Tulips, Freesias and Jonquils. The chief varieties which were employed in this attractive exhibit were Narcissus Golden Spur, N. Henry Irving, N. Soliel d'Or, Giant Campernelle Jonquils, and white Roman Hyacinths.

Large well-flowered bushes of Mimosas were associated with Camellias, Azaleas and Ericas by Messrs. Stuart Low and Co., who also had a good collection of Carnations which included Lady Daresbury, a well-formed flower of soft pink colour, Thomas Ives, Eileen Low and Philip Sassoon. In their collection of Carnations, Messrs. Allwood Bros. had stands of Wivelsfield Buttercup, Rapture, silvery-pink, and Guy Allwood, soft pink, among many of the older sorts, and also showed a few bowls of Dianthus Allwoodii varieties. Messrs. C. Engelmann, Ltd., had good vases of Master Michael Stoop, Laddie, Mab and Blanche in their exhibit of Carnations.

An attractive planting of early spring flowers, arranged by Messrs. Barr and Sons, included Narcissus minimus, Muscari azurea, Eranthis cilicicus, many early Crocuses, and dwarf Irises. The exhibit was framed with golden sprays of Eleagnus pungens aurea alternated with Rosemary. Messrs. Tuckers had Primula Winteri and P. Juliana in flower, and Saxifraga Paulinae, S. Burseriana major and other Saxifrages in bud. A goodly batch of Primula Barrowby Gem was shown with shapely little bushes of Irish Juniper by Mr. Stephen Sims.

In a well arranged rock garden, Messrs. William Cutbush and Son planted generous breadths of Iris reticulata, Iris sind-pers, Daphne Mezereum rubra, and a few early alpines. On higher levels, they had floriferous bushes of Chimonanthus fragrans, Garrya elliptica and Forsythia spectabilis. In a low planting on the tabling, Messrs. Wm. Wood and Son planted Erica carnea var. King George, various Crocuses, Anemone blanda coerulea, Iris unguicularis coerulea, Saxifraga Jenkinsae and Primula Barrowby Gem.

Messrs. Waterer, Sons and Crisp had a splendid bush of Forsythia spectabilis among dwarf Conifers as a background to Iris Tauri, Iris sind-pers, Iris reticulata, Crocus Sieberi, Crocus biflorus Weldenii alba and other early flowers. Goodly bushes of Magnolia Soulangiana, Forsythia suspensa and Skimmia japonica were shown by Messrs. L. R. Russell, Ltd., who again staged good plants of Epiphyllum Makoyana. Messrs. Patrick's had many dwarf Conifers, suitable for the rock garden, including Cupressus filifera nana aurea, C. plumosa aurea and C. pisifera aurea, of good golden colour. The Orpington Nurseries staged Hamamelis mollis, various Conifers, Erica darleyensis and Garrya elliptica.

In a rock garden exhibit, Mr. George E. P. Wood planted dwarf Conifers, Crocuses, Primroses and dwarf Irises. Mr. G. Reuthe had several Rhododendrons with large, luxuriant foliage, various uncommon Conifers, Ericas, Camellias and Acacias. Mr. J. Klinkert again showed shapely topiary specimens in evergreen Box.

Among the numerous exhibitors of paintings of flowers and gardens were Mrs. M. Townsend, Miss Edith Andrews, Miss W. M. A. Brooke, Miss M. Broom, Miss E. Warrington, Mrs. H. Spencer, Miss A. F. Wilkinson, Miss E. Kirkpatrick, Mrs. E. S. Ough, Miss Winifred Walker and Miss G. E. Bayley; perhaps the most interesting collection in this section was that representing flowers from southern Tanganyika, by Miss Orpen, paintings of a large variety of plants being displayed. Exhibits of garden designs were shown by Mr. Percy S. Cane and Messrs. Bakers.

As might be expected, there were numerous exhibits of garden implements and sundries, among the most interesting being the collection of ornaments by Messrs. Burton Holt, Ltd., garden baskets, etc., from the Lord Roberts Memorial Workshop; a small glasshouse by Messrs. Boulton and Paul, Ltd.; ornamental gates, etc., by the Battle Steel Window Co., and a summer-house and garden seats by Mr. C. White.

Fruit and Vegetable Committee.

Present: Mr. Joseph Cheal (in the chair), Mr. G. F. Tinley, Mr. A. Bullock, Mr. J. Wilson, Mr. F. Jordan, Mr. A. Poupart, Mr. W. H. Divers, Mr. E. A. Bunyard and Mr. A. N. Rawes, Secretary.

Several seedling Apples were shown before this Committee, but none was considered sufficiently distinct to deserve recognition.

Groups.

There was only one exhibit of fruits staged at this meeting, and this was a magnificent collection of Apples from the University of Reading Horticultural Department, which, from an educational view-point, was well worth close inspection, for there were nearly sixty varieties represented. The fruits were all richly coloured, and for so late in the season, the majority were in splendid condition. At the back of the exhibit were single-layer market trays containing fine fruits of Newton Wonder, Worcester Pearmain, Cox's Orange Pippin and King's Acre Pippin; there were large baskets of Golden Noble, Belle du Pontoise, Edward VII, Annie Elizabeth, Encore, Lane's Prince Albert and Beauty of Stoke, among culinary sorts, and Prince Edward, Fameuse, Blenheim Pippin and Reinette du Canada, good dessert varieties. Other Apples which were exceptionally well represented included Peasgood's Nonsuch, Charles Ross, Tyler's Kernel, Bowhill Pippin, Ribston Pippin, D'Arcy Spice, Barnack Beauty, Royal Late, Lord Burghley, Allington Pippin, Washington and Rival. A magnificent and well set-up collection.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of this Society was held in the R.H.S. Hall, on Monday, January 14, Mr. Charles H. Curtis presiding. Fourteen new members were elected.

Ten members withdrew interest from their deposit accounts, which amounted to £39 18s. 10d., and five members over the age of seventy years withdrew the sum of £206 15s. 2d. from their deposit accounts. The sum of £282 17s. 6d. was passed for payment to the nominees of six deceased members. The sick pay for the month on the private side was £101 13s. 4d.; state section £88 16s. 10d.; and maternity claims amounted to £9 10s. 0d. Grants were made to eight members on the state section for dental and optical treatment, which amounted to £36 17s. 6d., and six other cases were considered.

DUBLIN NATURALISTS'.

The Annual General Meeting of the Dublin Naturalists' Field Club was held at the Royal Irish Academy, on January 17. The annual report showed an advance in membership of thirteen, making a total of ninety. The Treasurer's report showed the Club to be in a satisfactory financial position, total receipts being £17 15s. 11d., and expenditure, £15 9s. 8d.

The new President, Professor M. J. Gorman, A.R.C.S., delivered an address on "Grass." Pointing out the importance of the Gramineae, he stated that there were upwards of three thousand species; in Ireland alone seventy to eighty distinct species are to be found, not taking into account the sub-species. In all temperate regions about a fourteenth of the total flora consists of grasses, which are found at all levels, from the water's edge to the summit of the highest mountain. When it is considered that a quarter of the earth's surface is covered with treeless, grassy plains, and the extraordinary range and variety of form displayed, from the tiny blade struggling on a well-kept garden walk, through the cereals, Pampas, African Reeds, and Sugar, to the giant Bamboos, the exalted position of the family is realised. From the economic standpoint, the grass family is obviously of the utmost importance. "All flesh is Grass"—it is instructive to reflect how this great universe, in an age of mechanism, is entirely dependent upon but one of the provisions of nature.

The folding of the leaves of various grasses was referred to by Professor Gorman as generally due to dry conditions, but he pointed out that it not infrequently occurs even although there be adequate water at the roots, owing to physiological dryness, a condition most often met with on mountains. There is a general tendency to regard the ligule at the base of the leaf-blade as an adaptation to prevent water from running down; it is an easy explanation, and one readily assumed or believed, but, alas! there is nothing to prove that it is so.

Professor Gorman stated that over vast areas grass forms the chief vegetation, especially where soil is rich but rainfall not distributed and there is intense heat in summer with long and severe winters—with the temperature low, the nights cold and the evaporating power of the air high; these conditions do not favour the development of tree or shrub growth, so in all such regions grass is dominant. A number of good lantern slides were shown illustrative of the use of grass in sand fixation, and of its growth, development and internal structure.

A vote of thanks, proposed by Mr. A. W. Stelfox and seconded by Mr. C. B. Moffat, was aptly conveyed to the lecturer on behalf of the meeting by Dr. R. Lloyd Praeger.

READING GARDENERS'.

"Teaching Gardening" was the subject of a lecture by Mr. John Ettle, a representative of the Bristol Gardeners' Association, before a good attendance of members of this Association, at the meeting presided over by Mr. W. Broomfield, on January 21, in the Abbey Hall. Mr. Ettle's lecture was divided under various headings, and he dealt with such subjects as the teachers, the students, elementary and secondary school gardens, horticultural colleges, flower shows and exhibitions and allotment competitions; he considered that the best training for a gardener was that obtainable in a good private garden.

The competition for the evening was for one Cyclamen plant in a pot, and some lovely specimens were shown. The first prize was awarded to Mr. A. H. Dow, The Gardens, Suthamstead House, Theale; second, Mr. J. Wynn, The Gardens, Hammonds, Checkenden; and third, Mr. A. W. Gower, The Gardens, Calcot Grange.

Obituary.

Gledhill Cottam.—Many readers will regret to hear of the death of this fine old Yorkshire gardener, after a long and painful illness, and more so as his injury was caused many years ago while staging one of the pillar groups at the York Chrysanthemum Show, which were then a feature of the exhibition. He was the winner of hundreds of prizes, and was an expert in grouping, for which he won numerous cups and medals. His services as a judge were in great demand throughout the East and West Ridings of Yorkshire. He died on New Year's Day, and leaves an invalid widow, three sons and a daughter. His second son, Mr. R. Cottam, who has charge of the Wistler's Wood gardens, Woldingham, Surrey, is the only son carrying on the family tradition of gardeners.

Frank Evans.—By the death, which has occurred somewhat suddenly, of Mr. Frank Evans, of Southfold Terrace, Birkenshaw, the district has sustained the loss not only of an interesting personality, but also of one who in a quiet way has done much useful public work. A native of Bourton on-the-Water, Gloucestershire, he devoted himself to gardening as a young man, and was sent by the firm of Messrs. J. Backhouse and Son, Ltd., of York and Leeds, to work at Gledhow. Then he removed to Birkenshaw, to take up a similar appointment at Moorlands Hall, which he held for about forty-seven years, retiring about five years ago. Among the gifts from the Oddy family which he treasured was a silver tea service presented to him when he completed twenty-five years' service, and a case of cutlery which he received on attaining the age of seventy years. He took considerable interest in the work of the allotment holders' associations, and was always ready to give amateurs the benefit of his extensive knowledge and long experience. Having for many years cultivated an allotment himself, he was brought into close contact with the local plot-holders. He was also an enthusiastic co-operator, serving on the Committee of the Birkenshaw Co-operative Society for many years, and was President of the Society.

Joseph Gérome.—We learn from the French horticultural press of the regretted death of M. Joseph Gérome, who passed away in his native place, Hadol (Vosges), on December 31, 1928, at the age of sixty-five years. M. Gérome was a professor of botany and horticulture, and had occupied successively the posts of head of the botanical school, head of the hot-houses, head gardener, and Vice-Director of the experimental garden of the Museum in Paris; and for thirty years he had delivered, each year, the course of lectures on indoor and outdoor floriculture at the Versailles Horticultural College. His studies on the origin of certain vegetables, on nomenclature, and on vegetable teratology were well-known, and he was awarded the ranks of Commandeur du Mérite Agricole, Officier de l'Instruction Publique, and, only a few months before his death, Chevalier de la Légion d'Honneur.

Johannes Gabriel.—To the Berlin Horticultural journal *Die Gartenwelt* we owe the sad news of the death of one of the most promising of the younger school of German garden "technicians"—Johannes Gabriel, "Oberinspektor" of the parks and gardens department of Essen. The young man—for he was only thirty-two years of age—had been appointed by the municipal authorities to his responsible post in view of the valuable experience he had gained in connection with the organisation of the Dresden Horticultural Exhibition. A similar exhibition is to be held shortly in Essen, and Herr Gabriel was to have had charge of the arrangements. His death will be a sad blow to the authorities, and seems a tragic end to a life full of hope and promise.

Romain de Smet.—We learn with great regret of the death, at the age of seventy-eight years, of M. Romain de Smet, brother of the late Arthur de Smet, and like him, a famous and successful Belgian horticulturist. He was one of the oldest nurserymen in the Ghent district, and had contributed in great measure to the development of the industry. His death will be a sad loss to Belgian horticulture in general, as well as to his bereaved family.

ANSWERS TO CORRESPONDENTS.

Arum Rot.—*C. P. G.* Your Arums are attacked by soft-rot, due to a Bacillus (B. carotovorus); the disease usually shows itself about January. Remedial measures include: (1) After the plants dry off, shake the "corms" free from all soil, scrape off the adventitious roots, and scrub with water, using a stiff brush; steep the "corms" in a two per cent. formalin solution (forty per cent. formaldehyde), and pot them into sterilised soil and pots; (2) cut off diseased portions from affected "corms" before treatment; (3) spray the staging and borders with a two per cent. solution of cresylic acid or Voss's Creol, before replacing the plants.

Coleus Diseased.—*T. J. M.* The Coleus plant received was attacked by one of the damping-off fungi, Phytophthora cryptogaea. Remove and burn affected plants; sterilise the soil and pots in which affected plants have been grown (180°F. for three hours); the presence of lime in the compost is a deterrent; and careful watering is essential—water should not be obtained from a contaminated source, *i.e.*, avoid using water from a tank in the house where the drainage water from the pots in which diseased Coleus are growing drips into the tank.

Names of Fruits.—*A. E. K.* Uvedale's St. Germain.—*W. F. B.* Pear No. 1, Glou Morceau; 2, Knight's Monarch; Apple Schoolmaster.—*H. L. D.* Calville Malingre.

Communications Received.—J. F.—F. R. D.—W. S. C.—R. F.—A. F. —J. H.—F. J.—W. B.—W. K.—A. C. H.—H. G. C.—W. S.—W. T. P.—R. C.—S. A.—J. W.—G. W. M.—J. B.—W. A.

THE
Gardeners' Chronicle
No. 2198.—SATURDAY, FEBRUARY 9, 1929.

CONTENTS.

Alpine garden—
  Pratia angulata ... 104
  Three good Mertensias 104
Alpine lawn, the ... 100
Amos, Mr. A. E. ... 92
Anthurium Rothschildianum var. Excelsior 93
Begonias for summer bedding 98
Bulb mite, the ... 106
Collecting pollen for treatment of hay fever 91
Cyclamens, hardy ... 97
Dutch Elm disease, the 91
Evergreen, an attractive 100
Florists' flowers—
  Border Carnations... 102
  Early-flowering Chrysanthemums ... 102
Indoor plants—
  Begonia ulmifolia... 96
  Freesias from seeds 96
  Myriophyllum proserpinacoides ... 96
Japanese Chrysanthemums for large blooms 96
Leeks, white tip disease of 106
Obituary—
  Garnet, Gerald ... 110
  Jadoul, René ... 110
  Wilson, James ... 110
Plant pests in East Sussex during 1928 105
Primula, the genus ... 104
Propagation of Rhododendrons by cuttings 99
Royal Scottish Arboricultural Society ... 92
Scottish forests, story of the 92
Societies—
  British Carnation ... 108
  British Delphinium 108
  British Florists' Federation 109
  Leeds Paxton ... 110
  Salisbury Gardeners' 108
Trees and shrubs—
  Akebia quinata ... 104
  Escallonia pterocladon 103
  Vitex Agnus-castus 103
Vegetable garden—
  Parsnips 108
Water garden—
  Butomus umbellatus 98
Week's work, the ... 94
Wisley, notes from ... 103

ILLUSTRATIONS.

Amos, Mr. A. E. 92
Anthurium Rothschildianum var. Excelsior 93
Carnation Kathleen 95
Cyclamen Rohlfsianum 97, 98
Leeks, white tip disease of 106
Odontoglossum mirum var. aureum 101
Rhododendron Nobleanum 99
Rhododendron occidentale hybrid 99

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39·5°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, February 6, 10 a.m. Bar. 30·3. Temp. 44°. Weather, Foggy.

The Dutch Elm Disease.

SINCE attention was first drawn in our columns on February 19, 1927, to the Dutch Elm Disease, by Dr. Malcolm Wilson, of the Mycological Department, University of Edinburgh, it has not only obtained a foothold in this country, but has spread with such remarkable rapidity as to make it probable that the disease was established here before its presence was detected in July, 1927, on a tree at Totteridge. The Forestry Commission has now issued a leaflet* on the disease, from which it is clear that science is as yet in the dark as to its cause and remedy. A peculiar feature of the disease, which has assumed an epidemic form in the south and centre of England, is that it has apparently made no headway in the north of the country, and this may possibly afford mycologists a channel for investigation. On the other hand, the disease seems to have been observed so far north as Norway, so long ago as 1920, and was reported at Oslo in the same year; therefore, latitude may have no bearing on its incidence. In the first stages of the disease it was thought that some species of Elm were more resistant than others, but the theory is discounted by the Commissioners, who report that all species of Elm at present cultivated in western Europe appear to be susceptible. It is certainly the case that in the south of England the Wych Elm is as susceptible as the common Elm. Although it is as yet early to reach a definite conclusion on the point, the Commissioners regard the disease as one to which immature trees are more liable than those of established age; but observation of trees in Holland shows that old specimens are by no means immune. The means by which the fungus first reached this country remain a mystery, and the leaflet makes it clear that the precise method of infection is still unknown. It may even enter by the roots. Since, however, the spores of the fungus are enveloped in a mucilaginous substance, it seems more likely that they are conveyed from tree to tree by birds or winged insects, than by wind. The suggestion receives weight from the fact that spores of the fungus have been found on insects crawling over diseased Elm stumps here. Unfortunately, it has not been possible to catch any migratory birds in the act of alighting here with the sticky spore envelope on their claws. The Commissioners are unable to suggest effective methods of control, and in view of the well-known mechanical difficulties of spraying trees forty to sixty feet in height, they wisely refrain from any suggestions on the subject. In the present state of our knowledge, it seems that the axe or the saw is the only remedy, the former to be applied in serious cases in felling the trees, and the latter in lopping isolated branches which show signs of infection. In Holland this has been done with excellent results in the case of some old trees which have shown signs of local, as distinct from general infection, but it by no means follows that the removal of a diseased bough will save a tree. On the other hand, this may save it, for it no longer seems to be considered that once a tree is infected it is definitely doomed. It almost seems as if the epidemic had some of the characteristics of a virus disease, as the trunk, boughs and branches of a tree may show the typical rings of brown spots just under the bark long before there is any external sign of anything being wrong. According to the leaflet, the fungus, Graphium ulmi, lives in the discoloured vessels of the wood, and may form fructifications on the exposed surface of dead wood. A fructification takes the shape of a minute black stalk, about 1 mm. long, which has at its apex a drop of mucilage containing myriads of microscopic spores. The gummy fructifications appear on the ends of dead twigs or on stumps of diseased trees which have been cut down, and in cracks in the stumps. The Commissioners express a hope that some species or variety of Elm may be found which is immune from infection, and meanwhile, those who contemplate the planting of Elms would doubtless be wise to hold their hands until the epidemic has passed or science has found a remedy for it. The fact that mycologists have so far been able to reach no definite conclusion as to the origin of the fungus or the means by which it is transmitted, is disappointing, for although English scientists have had but a short time in which to carry out their investigations, Continental mycologists have been working on the disease for many years. A prime difficulty is that the activities of the fungus in the field can only be studied during six months of the year.

Dahlias in Public Parks.—At the meeting of the Association of Parks and Botanic Gardens Superintendents, to be held in the R.H.S. Lecture Hall, Westminster, on Tuesday, February 12, an address will be given by Mr. A. J. Cobb (Lecturer in Horticulture, University of Reading), whose subject will be "Dahlias as a Feature in Public Parks." The address will commence at 7 p.m., and will be illustrated by lantern slides.

Venidium fastuosum.—We have received so many enquiries concerning the subject of last week's coloured plate that we cannot reply to them separately. This handsome Composite is not yet in commerce, but we expect it will be offered next year.

Ursinia anethoides—Mr. T. Hay points out that a clerical error appears in his notes on "Annual Flowers" (p. 76). The R.H.S. Award of Merit was granted to Ursinia anethoides (see *Gard. Chron.*, July 7, 1928, p. 3, Fig. 1), a first-class plant which is different altogether from U. anthemoides, the latter being not nearly so fine a subject as U. anethoides.

A Swedish Rosarian Botanist.—Immediately after the tragic death, in a little Canadian hotel, of the Swedish botanist, the Rev. Enander, an authority on Salix, and on the same day when the latter was interred at his northern home parish of Lillherrdal, two members of the Riksdag introduced a motion in the first and second chambers requesting an appropriation for engaging a *locum tenens* for the Rev. L. P. R. Matsson, in the country parish of Helsingtuna, in order to enable this clergyman to devote his time to his researches on the different species of European Roses, in which field he is regarded as a foremost living authority. He is fifty-nine years old, and has studied the wild and cultivated European Roses for nearly forty years. Leading Swedish botanists warmly support the Riksdag motion, stating that there is no one else in the world capable of following up and completing the Rev. L. P. Matsson's researches, most of which have been carried on in his private Rose garden.

Wart Disease of Potatos.—The Department of Agriculture for Scotland has issued a general licence authorising occupiers of holdings not exceeding half-an-acre in extent, and of private gardens, to plant the undernoted varieties of early Potatos, which are not immune to Wart disease, on condition that the crops will be lifted not later than August 15, except north of Angus and Perth, where the period is extended to August 31, viz.: Beauty of Hebron, Duke of York (Midlothian Early), Early Rose, Eclipse (Sir John Llewellyn), Epicure, Harbinger, May Queen, Myatt's Ashleaf, Ninetyfold, Puritan, Sharpe's Express and Victor. This licence does not apply to any land on which Wart disease has occurred, or to any land within certain districts, including Aberdeen (the Elmfield Allotments), Edinburgh, Glasgow, Perth, and a number of other delimited areas.

Proposed Society of Garden Architects.—All who are interested in the subject are invited to attend a meeting that will take place at 9, Gower Street, Bedford Square, W.C.1, on Wednesday, February 20, at 7 p.m., to discuss the formation of a proposed Society of Garden Architects. All those desirous of receiving an invitation should write to the convener, Mr. Richard Sudell, at the above address, enclosing a stamped and addressed envelope.

Queen's Institute of District Nursing.—The Gardens Committee of the Queen's Institute of District Nursing states, in its report for 1928, that 727 gardens were opened to the public between the months of April and September, and a total sum of £6,806 11s. 8d. was raised on behalf of the Institute. Of this sum, the Royal Gardens at Sandringham were responsible for £728 4s. 0d. The owners of gardens are to be invited to open them annually in support of the Institute; many owners have already agreed to do so this year.

Collecting Pollen for Treatment of Hay Fever.—It is a well-known fact that the pollen of certain flowers, and especially of grasses, is responsible for the disease known as hay fever, from which many individuals suffer annually. Recently, several scientists, working with the pollen of various grasses, have obtained good results in the treatment of hay fever with different protein fractions obtained from the pollen responsible for the complaint, and experiments have demonstrated that hay fever can be treated successfully by using extracts prepared from the particular pollen to which the sufferer is sensitive. Consequently, there is now an increasing demand for wind-borne pollen for the preparation of these extracts, and the work of collecting the pollen is considered of such national importance in America that a special pamphlet, entitled "Methods of Collecting and Preserving Pollen for Use in the Treatment of Hay Fever," compiled by James W. Kelly, has been issued by the United States Department of Agriculture (Circular No. 46, October, 1928). In this the various methods of collecting the pollen are described, and it is obvious that, in order to obtain pollen in quantity and of suitable purity, considerable skill is necessary in carrying out this work. The author describes in detail, with the aid of several instructive illustrations, the method that has so far proved most successful, and he also discusses the question of the yield of pollen from various plants, and the period at which pollenation takes place. Appended to the work is a list of the plants from which pollen has been collected by Mr. Kelly, together with the period at which the pollen of each species was collected; among these plants are Acer Negundo, Agrostis palustris, Alnus rugosus, Ambrosia elatior and A. trifida (the Small and Giant Ragweeds respectively), various Andropogons, Cannabis sativa (Hemp), Castaneas, Chenopodium album and C. ambrosoides, Dactylis glomerata, Ginkgo biloba, Helianthus annuus, Juglans nigra, Liquidambar styraciflua, Lolium multiflorum, Phleum pratense (Timothy Grass), Pinus sylvestris, Plantagos, Plantanus occidentalis, Poa compressa and P. pratensis, Quercus alba and Q. velutina, Rumex, Sambucus canadensis, Secale cereale (Rye), Tilia americana and Zea Mays.

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* *The Dutch Elm Disease (Graphium ulmi, Schwartz).* Leaflet No. 19. Forestry Commission, London, S.W. 1. December, 1928.

"The Story of the Scottish Forests."—This was the subject of a delightful and interesting address given by Dr. James Ritchie, Natural History Department of the Royal Scottish Museum, Edinburgh, to the members of the Aberdeen Natural History and Antiquarian Society, in Aberdeen University Buildings, on January 24. Mr. J. B. Nicol, ex-President of the Society, presided. At the outset, Dr. Ritchie reminded his hearers that no subject was more closely bound up with the story of the country's development than the history of the Scottish forests. Forests had always held the fancy and inspired the awe of primitive man. In early European civilisation the forests were the great barriers which separated people from people, and for centuries prevented that intercourse of trade which, in the end, led to the diffusion of civilisation throughout the continent. One could quite easily understand how the darkness of the forests, their silence, their vastness, had all impressed themselves upon the minds of the human race. The earliest forests had long since disappeared from the surface of Scotland, and their remains lie hidden in the layers of peat bogs. But these layers tell a wonderful story of changes which pursued each other over the land 20,000 years ago. The first forest was a scanty woodland of Birch and Willow which invaded the country after the snows of the Ice Age had melted, and which clung to the valleys and lower levels of the mountain sides. The second forest was the greatest forest Scotland had ever seen. It was a vast extent of Pine which overspread the land and ascended the mountains far beyond the limit of present-day Pine woods. This great forest had long since been swamped by the bogs of a climate even moister than that of modern times; but it was succeeded by woods scarcely less extensive, which were utilised by the men of the Bronze and Iron Ages. Soon, however, the destructiveness of man began to tell upon the forests. The records of Scottish laws revealed continuous efforts to protect existing woods and to encourage fresh planting. In illustration of these laws, Dr. Ritchie raised a hearty laugh by reading quotations from these old Scottish forest rules, which contained many curious and severe penalties, even to "hanging to the death," meted out to offenders. Then Dr. Ritchie put the query: "What brought about the disappearance of these forests?" He answered it by describing how enemies had levelled the woods during times of invasion, and how the Scots themselves had burned them to get rid of the strongholds of robbers and wolves. But the lecturer attributed the greatest destruction to the use of wood for household fires, for house construction, and for the wants of the great industries. Nevertheless, he contended that man could not be held responsible for all the destruction. Changes of climate, great wind storms, forest fires and encroachments by the sea, had all played their parts in the disappearance of those superb forest lands. It was a most instructive evening, and warm and hearty were the thanks awarded Dr. Ritchie for his fine contribution to the Society's activities.

Mr. A. E. Amos.—Recently appointed Hon. Secretary of the National Carnation and Picotee Society, Mr. A. E. Amos must now be an unusually busy man, as he also holds the position of Hon. Secretary of the British Gladiolus Society, of which progressive body he was one of the founders. For about a score of years Mr. Amos has been associated with Messrs. D. Prior and Son, Ltd., of Colchester, and is now Secretary of the Company. Keenly interested in Dahlias, Carnations and Gladioli, he has won numerous awards for flowers of his own raising, including the Foremarke Cup for Gladioli in 1927, after being "runner-up" for it in the previous year. Mr. Amos is a frequent contributor to the horticultural press, and a lecturer on entomological matters; he has won several cups and medals for his entomological exhibits. From August, 1914, to February, 1919, Mr. Amos served with His Majesty's Forces overseas—Gallipoli, Palestine, Greece, etc., and it is probable that this experience created a modest "wanderlust," as we have met him in many continental cities on the occasion of international and other important horticultural exhibitions, where, usually, he has been called upon to act as a judge of Dahlias and other florists' flowers.

MR. A. E. AMOS.

Revival of the Devon and Exeter Horticultural Society.—Like the Norfolk and Norwich Horticultural Society, the above Society was founded exactly a hundred years ago, and is one of the oldest in the country. From its formation in 1829 until 1915, the Devon and Exeter Society held, altogether, two-hundred-and-fourteen shows. For many years the summer show at Northernhay, just within the old city walls, was noted for the excellence of the trained stove and greenhouse plants, and the beauty of the miscellaneous groups of plants, while the Chrysanthemums at the autumn show in the old Victoria Hall were of equally high quality. But during the later years, the Committee was usually embarrassed financially through small gates, and this, combined with the war period, decided the fate of the Society (for a time) in 1915, when the last show was held. But we are glad to know that local horticulturists have made up their minds to revive the Society which did such good work over a long period, and a show is to be held in the Civic Hall, Exeter, on November 14 and 15 next. Already several valuable Challenge Cups have been promised, and it is confidently expected to arrange a schedule of prizes worthy of the old traditions of the Society. Colonel Radcliffe, C.I.E., D.S.O., is the President, and Mr. G. W. Jackson is Hon. Secretary of the Society.

Smith's Advertiser's Handbook.—As a guide to nurserymen, florists and horticultural sundriesmen, in fact, to all tradesmen who make a practice of advertising their wares, *Smith's Advertiser's Handbook*, published by Smith's Advertising Agency, Ltd., 100, Fleet Street, London, E.C.4 (price one guinea), should prove of great value, as it contains practically all the information required for advertising either on a limited, or an extensive scale. There is a classified press index, and a press guide which is very comprehensive, giving the net sales of many of the publications, the scales of charges for advertising in each, and various other important details. The "Traders' Guide," another section of the publication, contains the principal shopping centres, with classified information regarding their population, market days, industries, etc., while there are also guides to class distribution and outdoor advertising in Great Britain. The *Handbook* is beautifully bound and well printed.

Legacies to Gardeners.—The late Alderman Benjamin Hurst, J.P., of Burbage Grove, Hinckley, Leicester, who died on December 20, 1928, left £50 to his gardener, Mr. David Allen.—The late Miss Mary Charlotte Enderby, of Marley Mere, Shottermill, Surrey, who died on November 18, 1928, left £50 and her cottage, known as The Mount, at Marley Mere, Shottermill, to her gardener, Mr. William Wright, "In gratitude for his long and faithful service to me."—The late Mr. William George Blagden, of Heath Road, Petersfield, Hants., who died on November 17, 1928, left £50 to his gardener, Mr. Edwin Hunt, if still in his service.

Royal Scottish Arboricultural Society.—At the seventy-sixth annual meeting of this Society, held at Edinburgh, on Friday, Sir Hugh Shaw-Stewart, Bart., was re-elected President, and Professor Wright Smith, Royal Botanic Gardens, Edinburgh, and Mr. John Michie, Kincairn, were elected to fill the vacancies as Vice-Presidents, while the following members were elected to fill the vacancies on the Council:—Mr. John Alexander, Edinburgh; Mr. John Clark, forester, Gordon Castle; Mr. J. Hunter Blair, Blairquhan, Maybole; Mr. William Munro, factor, Darnaway, Forres, and Mr. William L. Scott, forester, Douglas Castle. The Annual Report stated that the membership numbered 1,626, a decrease of ninety-four, due mainly to an unusually heavy death-roll of forty-seven. Mr. Charles Buchanan, Pinicuik, reported on the summer excursion to be held in the county of Angus from June 24 to 28, with Edzell as the headquarters. On the motion of Sir John Stirling Maxwell, a Committee was appointed to consider whether any changes were required in the constitution or policy of the Society in order to extend its usefulness and activities. At the annual dinner, held in the evening, and presided over by Sir Hugh Shaw-Stewart, Sir J. Stirling Maxwell, in proposing the toast of "Forestry," said they were now in the last year of the ten years for which the Forestry Commission was appointed, and he was glad to say it would come within a short distance of fulfilling the task which was allotted to it. It had to plant 150,000 acres with three-and-a-half millions of money in the ten years, and it would fall short of that area by about 15,000 acres, that being accounted for partly by the changes made in the programme, and partly by the fact that the fund had to bear the expense of about £40,000 spent on the relief of unemployment. The number of forest holdings created up to date in Scotland was 151. In England, 800 holdings would be created by the end of the ten years. In England forty holdings were occupied by ex-miners, but he was sorry to say they had only been able to settle seven ex-miners. Lord Clinton had been able to arrange with the Government that their successors would have £5,500,000 for the work, and they would be able to plant about 25,000 acres a year. It was part of the bargain that £1,000,000 out of the £5,000,000 was to be spent in the creation of forest holdings. Professor Stanfield proposed "The Royal Arboricultural Society," and the Chairman replied.

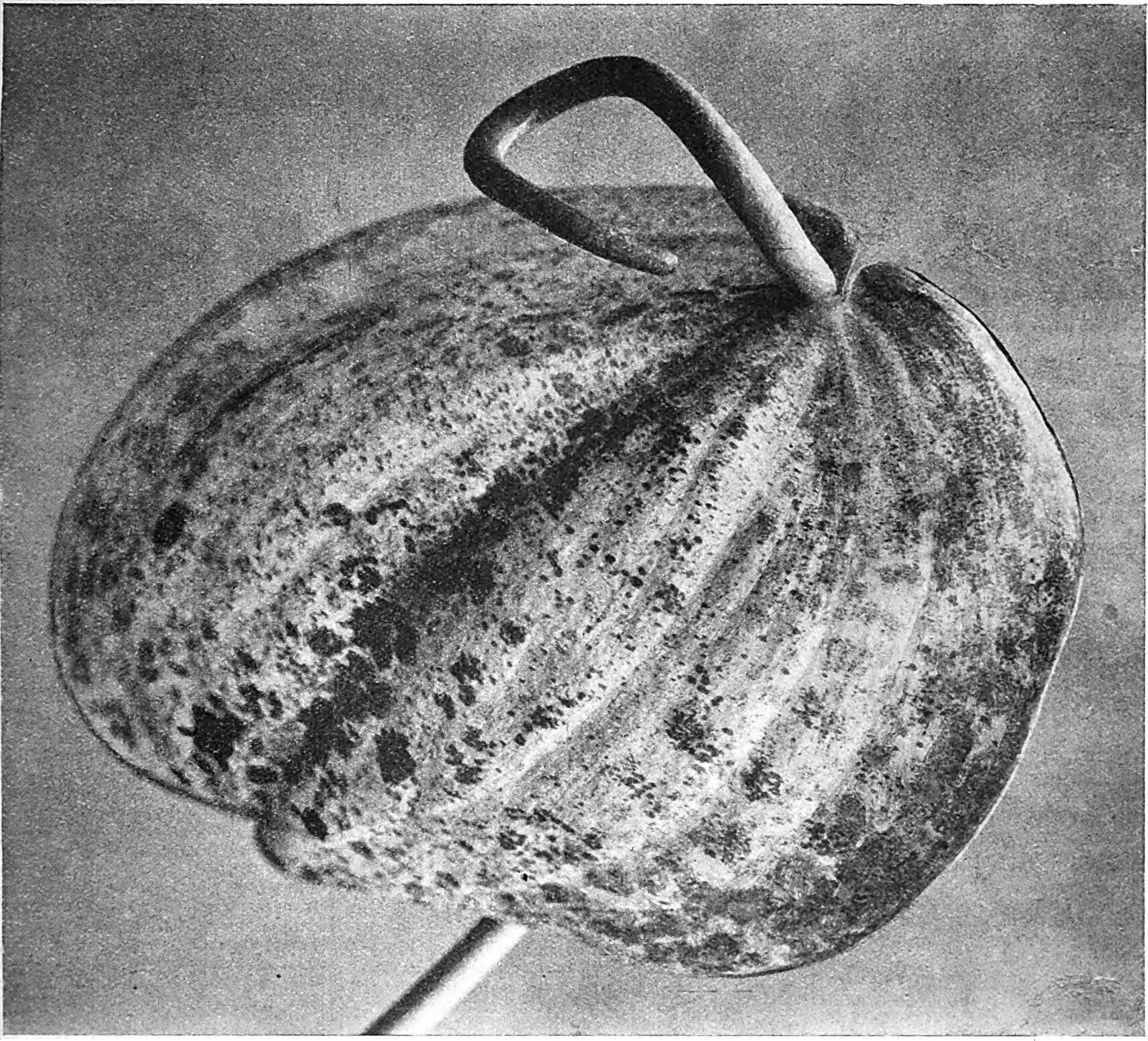

FIG. 50.—ANTHURIUM ROTHSCHILDIANUM VAR. EXCELSIOR.
R.H.S. Award of Merit, January 29. Spathe creamy-white, marked with red. Shown by Lionel de Rothschild, Esq. (gr. Mr. A. Bedford), Exbury, Southampton.
(see pp. 89 and 93.)

Anthurium Rothschildianum var. Excelsior.—Messrs. Sanders, St. Albans, inform us that Anthurium Rothschildianum var. Excelsior, described in our issue of February 2, p. 89, and figured above, was cultivated and brought to the R.H.S. Hall by them but was purchased by Lionel de Rothschild, Esq., Exbury, Southampton, who, however, would like to have the Royal Horticultural Society's Award of Merit confirmed to Messrs. Sanders and not to himself. We understand the Council of the Royal Horticultural Society has been advised to this effect.

Appointments for the Ensuing Week.—MONDAY, FEBRUARY 11: East Anglian Institute of Agriculture's lecture; Birmingham and Midland Gardeners' Association's lecture; Derbyshire Horticultural Association's meeting; Harrogate and District Horticultural Association's meeting. TUESDAY, FEBRUARY 12: Royal Horticultural Society's Committees meet; Jersey Gardeners' Society's meeting; Faversham Chrysanthemum Society's meeting; Sundridge and Brasted Society's meeting. WEDNESDAY, FEBRUARY 13: Sheffield Chrysanthemum Society's lecture; Royal Gardeners' Orphan Fund Annual Meeting at the R.H.S. Hall, Vincent Square. FRIDAY, FEBRUARY 15: Manchester and North of England Orchid Society's exhibition. SATURDAY, FEBRUARY 16: Leeds Paxton Society's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Messrs. Henderson's Nursery, Pine-Apple Place.*—The show house here is already gay with Hyacinths, among which Grand Vainqueur, white; Nimrod, single, blue; and Mars, red, were conspicuous; also spring-flowering Heaths, Cinerarias, Linum trigynum, which is a really useful plant at this season; Genista racemosa, Chinese Primulas, both single and double; Narcissi and the Oleander-leaved Eriostemon. The pretty little Cyclamen coum has likewise been in full bloom ever since Christmas. Of this variety too much cannot be said; it is exceedingly beautiful, and no greenhouse should be without it. In a long span-roofed house was a number of plants of the Sikkim Rhododendron ciliatum, well set with flower buds. Though quite hardy, this is a neat kind for a pot; it occupies little room and is therefore very suitable for small houses in which variety is an object. A degree of elegance was imparted to the flat front shelf of this house by introducing here and there among the small plants which it contained the variegated Aloe-leaved Yucca, with fine heads of yellow-striped leaves set on thick, gnarled trunks, a foot high or so, gave the whole quite an exotic appearance. The stove is becoming gay with Amaryllids. By potting these at different seasons, they may be had in succession for a long time, and the display which they make should not be overlooked by those who are fond of showy flowers. Aeschynanthus ramosissimus was likewise in blossom, as were various Begonias and Thyracanthus rutilans, a scarlet-flowered plant which promises to be very useful. The red-leaved Dracaena ferrea and terminalis served to enliven the monotony which too commonly prevails in plant houses during winter and early spring. Some small, coloured glass vases suspended from the roof, and filled with Lycopods, Ferns, and plants of that sort, were also objects at once striking and interesting, and we should think their skilful introduction into plant stoves generally would help to break the uniform appearance they too often present. *Gard. Chron., February 11, 1854.*

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Pleiones.—The late-flowering specimens of P. Hookeriana, which are now in flower, should receive attention at the roots directly the flowers are over, as new roots will be produced more quickly as the days lengthen, and these are easily damaged if allowed to grow long before repotting is done. These deciduous Orchids thrive best when fresh rooting material is afforded annually. Well-drained pans should be used, and a compost of equal parts of A.1. fibre, fibrous loam and chopped Sphagnum-moss, adding crushed crocks to keep it porous. Rough portions of compost should be placed over the drainage to keep it free; if the compost is built up cone-shaped and the pseudo-bulbs placed in small clumps fairly closely together, each with a small tuft of old roots attached to keep it steady, a much better effect is produced when they are in flower than if they are grown on one level. The soil should be worked firmly between the clumps, which should be distributed evenly in the receptacle, while the surface should be finished off with a little extra Sphagnum-moss. They should be grown in a light position or suspended from the roof at the cool end of the intermediate house, care being taken that they do not come into contact with the glass. Very little water will be required for some time after repotting, until the roots and growths are advancing, when more will be required. Later in the summer, as the pseudo-bulbs are swelling, occasional applications of soot-water should prove beneficial, and at this period the compost should not remain dry for any length of time. When growth is complete and the leaves turn yellow and commence to fall, drier conditions should be afforded until the young growths and flower-buds appear. The earlier-flowering Pleiones, P. lagenaria, P. praecox, P. maculata and others, which were repotted after flowering, are now rooting freely, and need an increased supply of water each time the soil appears dry. Later, during hot weather, the undersides of the leaves should be syringed frequently to keep red spider in check.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Strawberries.—Last month was anything but favourable for a start with early forcing of Strawberries, for although we had many sharp frosts, the sun seldom penetrated the fog. Dry fire-heat has played an imperative part in maintaining the very moderate temperature of 40° to 45° by night, and a few degrees higher by day. Where the earliest plants are producing their flower stems and young leaves are appearing freely, water may be given more liberally, especially if the pots are well filled with roots. It is a mistake to think Strawberries cannot be over-watered; this is easily done early in the year, but an experienced person can tell by the appearance of the plants when they require water, and then, without wetting the crowns, liberal supplies should be given. A camel-hair brush or rabbit's tail should be lightly passed over the flowers each day, when the temperature has reached its maximum. When well set, complete the thinning of the fruits to six or nine. Syringe the plants well and remove them to shelves near the glass in the warmest house at command, feed them well until the fruits show signs of changing, when clear water should be given, the supply being gradually reduced when the berries are well-coloured. Later plants of the leading kinds, in somewhat larger pots, should now be placed in light pits, as close to the glass as possible, and with the aid of a bed of fermenting leaves, the pit can be kept at a temperature of 45° to 50° on mild nights and a few degrees higher by day. On no account should they be hurried into growth, therefore give them plenty of air whenever conditions are favourable. As the early batches are moved forward the most promising of these later plants may be used to fill up the shelves, and in this way a succession may be maintained until the plants in cold pits begin to ripen their fruits. Once the warm weather arrives, Strawberries in pots will require plenty of water and liberal feeding with liquid and other stimulants to bring out their best qualities.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Dahlias.—Where these deservedly popular plants are grown in large quantities, it is now time to place the tubers in heat to provide a supply of cuttings for propagation. Some growers place the tubers on benches, others in boxes; at Wisley, where a large number of varieties is grown, we find it most convenient to place each kind separately in pots of sufficient size to accommodate two or three roots of each. By doing so, there is less chance of the stocks becoming mixed when cuttings are being taken. The multitude of varieties in each section is bewildering and is constantly being added to. A good guide to those who desire varieties suitable for garden decoration will be found in the lists published annually in the R.H.S. *Journal* of those that have received an Award of Merit or been highly commended in the yearly trials at Wisley. These plants are grown without any disbudding, and the awards are made after they have been carefully examined by the Dahlia Committee from the point of view of their value for garden decoration. This does not imply that others which have not received an award are of less value, as many good varieties are put into commerce that are not sent for trial.

Planting.—Every opportunity, from now onwards, should be taken to finish the planting of herbaceous borders and shrubberies as the ground becomes friable and in workable condition.

Michaelmas Daisies.—The strongest-growing varieties of Michaelmas Daisies give the best results if they are lifted and divided every year. When planting, only use the vigorous young growths around the edges of the clumps. Many kinds are best if only single shoots are planted. This principle may with advantage be carried out in the nursery or reserve garden if the plants are required for filling beds in the flower garden for autumn, as the majority transplant easily just before flowering; this is a useful method to adopt where a continuous display is required in the flower garden. A selection of useful varieties will be found in the following. In the Amellus group, plants of which should not be divided until spring, will be found many useful varieties for grouping near the front of the border, best among them being Frikartii, a remarkably free-flowering variety of looser habit than most members of the group; King George, Ruby, superbus, Robinsonii and Sonia. In the Novae-angliae group, Barr's Pink, with semi-double, rose-pink flowers, is the best, while Margaret Ballard, Royal Blue, Maid of Athens, Queen Mary, October Dawn, Little Pink Lady, Aldenham Pink, Nora Rogers, Wedgwood and Delicata, will be found useful representatives of the Novi-belgii section. Of the small-flowered Ericoides group, Doris, Twilight, Milky Way, Rosy and Progress should provide a useful selection. Silver Spray, of recent introduction, ought to prove of great merit.

Salvia virgata nemorosa.—This hardy herbaceous plant, frequently met with in herbaceous borders, is equally valuable for furnishing large beds or banks in the flower garden. The reddish-violet flowers are borne with great profusion over a long period, while the plants are of a sturdy, erect habit, only requiring the support of a few light twigs to keep them in position. This Salvia makes an effective ground work for Lilium auratum. It may be increased readily by cuttings or divisions.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hatfield, Hertfordshire.

Cinerarias.—The earliest Cineraria plants in the greenhouse are now showing their flower buds. They have filled their receptacles with roots and now need watering more frequently. Stimulants should also be applied in weak form, alternately with the waterings. The later plants may be kept growing steadily in a cool greenhouse or pit in which only sufficient heat is maintained to exclude frost. Cinerarias are very subject to attacks of aphis, but light fumigation with a nicotine compound, or spraying with Quassia extract once a fortnight, should keep the plants free from this pest.

Hyacinths, Freesias, Narcissi, etc.—Specimens of these which are developing their flower stems should be stood on shelves near the roof-glass to encourage sturdy growth. They should be introduced to the forcing house in small batches, so as to prolong the supply of flowers.

Richardias.—Plants of Richardia africana, the Arum Lily, that have been grown under cool conditions during the last few months with a view to their producing blooms in succession to the late Chrysanthemums, should now be commencing to flower freely, and to obtain the best results they should be given liberal applications of liquid manure and soot-water, which will keep them in a healthy condition. When producing their flower spikes, the plants require applications of these stimulants at least twice a week. If space is available for them to be planted out under glass, they should thrive and produce flowers in quantity, but even under these conditions they require some assistance from fertilisers to ensure the production of good spathes. A batch of Richardia Elliottiana may now be potted, using receptacles according to the size of the tubers; it will be wise to place them in receptacles rather on the small side, than to overpot them. Only fill the pots to half their depth with compost, so that ample room is left for top-dressing when the plants have started to grow freely. A temperature of 55° will be suitable to start them into growth. Care should be taken not to overwater them, but when they are in active growth and the pots are well filled with roots, they will require liberal supplies of water and liquid manure. R. Pentlandii requires similar treatment to that advised for R. Elliottiana.

Cyclamens.—Cyclamens raised from seeds sown last August, and which are now in shallow boxes or pans, should, if all has gone well with them, be ready for placing singly in small pots. The compost for this potting may consist of equal parts good open loam and leaf-mould, with a liberal sprinkling of silver sand added to keep the soil porous; old red bricks, broken very finely, and charcoal, should also be mixed with the compost. Do not pot the plants too firmly. A night temperature of 55°, with a rise of 10° during the day, should suit the young plants at this stage, while the house should be fumigated lightly on frequent occasions to keep aphis and mite in check.

HARDY FRUIT GARDEN.

By Henry H. Cook, Lecturer in Horticulture, Reading University.

Peach Leaf-curl (Exoascus deformans).—This fungus disease rarely attacks trees grown under glass, but is only too common on Peach and Nectarine trees when grown against walls in the open, especially during a cold and dull spring. Its attack is chiefly confined to the leaves, causing them to become fleshy and distorted; but it also attacks the young growing shoots, causing considerable malformation. Any deformed or dead shoots should be cut back now to healthy wood, and while the branches are free from the wall they should be sprayed with Burgundy mixture, which may now be obtained in powder form; it requires no preparation, except the adding of the requisite quantity of water, and after being well stirred it is ready for use. Every endeavour should be made to wet every portion of the tree, particularly the young twigs and buds, as re-infection, as a rule, is caused by spores which have lain dormant during the winter in the angles formed between the leaf-buds and the twig, and under the bud scales. A second application is advisable just prior to the bursting of the buds.

Apple Blossom Wilt and Apple Brown Rot.—These two diseases, although distinct, are closely allied. The same measures of control should be applied for both, viz., cutting all diseased spurs and shoots back to sound wood, and spraying, just prior to the bursting of the buds, with soft soap and ammonium polysulphide. The buds should be just on the point of bursting into leaf for this wash to have the best effect, and as it may be mixed with soft soap and nicotine, it serves the dual purpose of being a fungicide and an insecticide. At this period, aphis of all sorts, Apple sucker, caterpillars and capsid bug, will be on the move, and this combined wash will do an immense amount of useful work. The ammonium polysulphide is employed at one per cent., with the addition of 8 lbs. to 10 lbs. of soft soap to soften the water and improve its wetting and spreading qualities, and five ounces of nicotine of 95 per cent. to 98 per cent. purity, to every one hundred gallons of water.

Big Bud Mite of Black Currants.—Whether this pest is present or not, all Black Currant bushes should be sprayed now with one or other of the tar-distillate washes at five per cent., to destroy the eggs of aphis wintering on the bushes, for aphides are responsible for the spread of mite and "virus" diseases, such as "reversion." Having once got rid of aphis, we have, to some extent, limited the spread of big bud mite. This measure, however, must be followed up a little later by the application of a strong lime-sulphur wash, *i.e.*, one in twelve, and the most effective period for this is when, on healthy growths, the flower trusses appear outside the buds but the flowers have not actually opened. Mr. Lees, of Long Ashton, describes the right time for spraying as "when the leaves are about the size of a sixpence." These leaves may, after being sprayed, show a certain amount of scorching, but the loss caused by this spraying is infinitesimal compared to the amount of good resulting.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunstar, Somerset.

Tomatos.—A sowing of Tomato seeds may be made now, to have plants ready for planting out early. Autumn-raised plants should be ready for shifting into six-inch pots, using a good, rich and well-mixed compost of loam, sand and leaf-soil, with some wood-ash added. Excessive heat in the Tomato house should be avoided, and the plants should be kept as near the glass as possible to ensure sturdy growth. Plenty of air should be admitted during fine weather, but have plenty of covering material at hand with which to protect the plants during frosty weather, as Tomatos are naturally very tender.

Asparagus.—If new Asparagus beds are to be made, they should be prepared now, marking off the beds five feet to six feet wide; this width should be sufficient for three or four lines to each bed. To make the bed, remove the soil to a depth of about eighteen inches, then deeply fork the bottom and put in any vegetable refuse that may be available, covering it with a good layer of well-decayed manure. When the top soil is replaced, the bed will be found to be much higher than it was before, but if left undisturbed it will gradually settle and sink considerably before planting time, the end of March or early April, arrives. Very little is gained by growing Asparagus plants for two or three years from seeds to supply plants for forming new beds, as crowns may be procured at reasonable prices and in splendid condition, from a nurseryman. However, if it is desired to raise Asparagus plants, seeds may be sown now in boxes, and the seedlings, when large enough to handle, pricked out into boxes or, better still, frames, in which they may be grown on steadily for one season, planting them out the following spring. For the sowing of Asparagus seeds out-of-doors, April will be early enough. They should be sown in drills twelve inches or more apart and two inches deep, in ground in which they may remain for two years, after which they should be separated and replanted.

Onions.—The seedling Onions that were sown under glass should now be ready for pricking out into boxes. These should be of suitable size, and each, after having a layer of decayed manure placed at the bottom, should be filled with a compost consisting of half-a-part loam, a quarter-part leaf-mould, and a similar quantity of sand, which should be pressed fairly firm. Care is needed when handling the young plants, as they are very easily broken and damaged. Place the boxes of seedlings in an early vinery, and spray the plants once a day with tepid water.

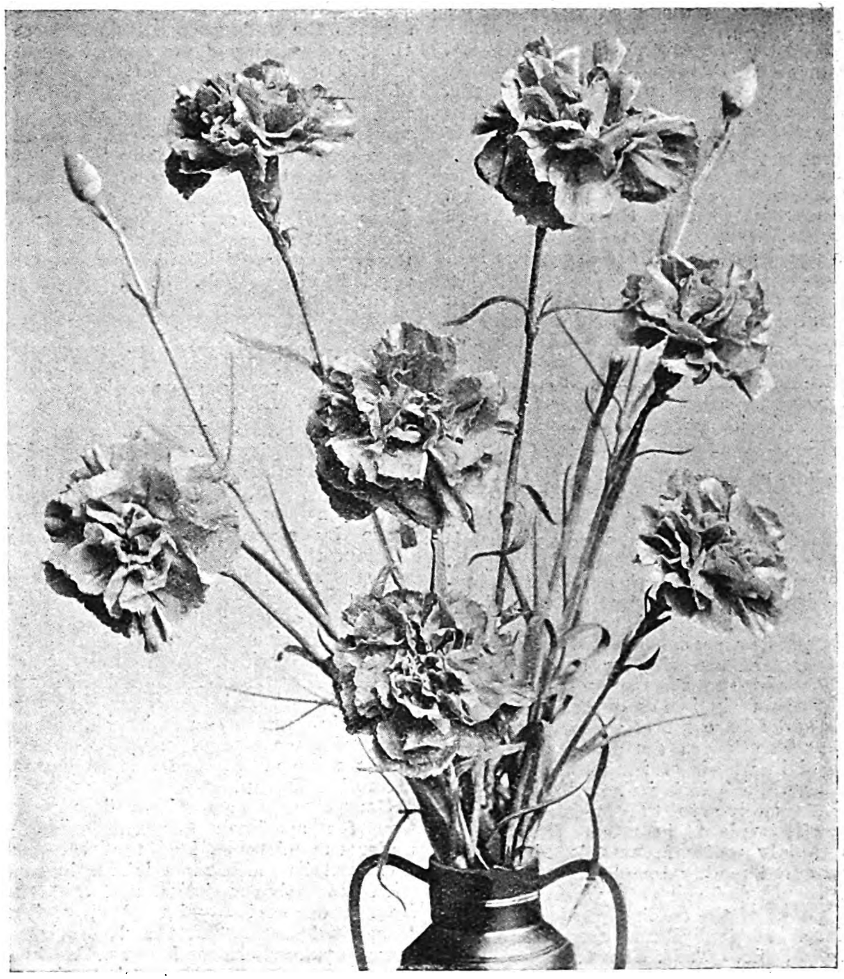

FIG. 51.—CARNATION KATHLEEN.
R.H.S. Award of Merit, January 29. Flowers light rose-pink, sweetly scented.
Shown by Messrs. Stuart Low and Co. (see p. 89.)

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

Potatos.—As seed-sets of Potatos are obtained, they should be set out in boxes in single layers, standing each tuber on end with the eyes exposed; they may be kept for a week or two in a glasshouse, but must not be forced too much, and should be placed in a cool shed for a fortnight previous to planting. The advantages gained by sprouting the tubers is obvious, and if many eyes burst, remove all but one or two of the shoots at planting time.

Parsnips.—To produce a good crop of Parsnips seeds should be sown whenever the ground is in suitable condition, as they require a long season of growth to produce good roots. A plot which was heavily manured for the previous crop—Celery or Onions—is most suitable, provided it is worked deeply some time previous to sowing the seeds. A good tilth is necessary, and the seeds should be sown thinly in rows two feet apart, covering them, especially if the soil is heavy, with some sifted, old potting soil. Firm the soil with the feet and do not obliterate the rows with a rake, so that the progress of the seedlings may be watched.

Spraying.—As the fruit trees will soon be commencing growth, all winter spraying should be completed at the earliest possible date. Where mildew, Peach-leaf curl, big bud on Black Currants, or moss on the trunks of trees, have to be dealt with, there is no better spray for dealing with them than lime-sulphur. For all insect pests on fruit trees and bushes, one of the tar distillate washes, or any of the caustic alkali washes should be used, care being taken to wet every part of the tree. If a spraying machine, or a hand sprayer for small quantities, is used, spraying should not be an expensive operation, and the results amply justify it. Roses of all kinds should be sprayed once or twice during the early spring to destroy the resting spores of black spot and mildew, any of the sulphate of copper mixtures being suitable for this purpose.

Half-hardy Annuals.—Many half-hardy annuals may now be sown in pots or boxes of fine sandy soil, either in a warm house or in a frame. Sow the seeds thinly and remove the seedlings, so soon as they are well up, to a cool house, placing them near the roof-glass, to encourage short, sturdy growth.

Cyclamens.—These are now making a brave show and must not be allowed to become dry at the roots; applications of very weak liquid manure will assist them to continue in flower, but this should only be given when the compost is damp.

INDOOR PLANTS.

BEGONIA ULMIFOLIA.

This Columbian species should be included in every collection of fibrous-rooted Begonias, for its distinct habit and handsome foliage combine to make it a plant of decided value for growing in conjunction with other species and varieties, while the white flowers, although by no means so beautiful or showy as those of many other Begonias, make a pleasing relief to the more prevalent pinks and reds.

The plant under notice is of erect, branched growth, having stout, green, semi-succulent stems, marked with small, white specks, and with a reddish tomentum. The leaves are shining green above and greyish-green beneath. They are rather distantly spaced along the stems, and have short petioles and prominent, scarious stipules. As the specific name suggests, they resemble those of the common Elm, being from three to eight inches in length, ovate-oblong, unequal at the base, and abruptly short-jointed; the margins are doubly serrate, and the venation is very strongly marked, the veins running in pinnate fashion from the mid-rib. Both the upper and lower surfaces are covered with soft, scattered hairs. The flowers are borne freely in peduncled clusters. They are greenish-white in the bud, but open a clear white. The staminate blooms usually have two equal petals, and are about one inch in diameter.

An intermediate house temperature and a humid atmosphere suit Begonia ulmifolia, while it should be provided with a rich compost, as it is a gross feeder. Starved plants quickly turn yellow and drop their leaves; it is therefore essential to feed pot-bound specimens liberally with dilute liquid manure, soot-water and approved proprietary fertilisers.

MYRIOPHYLLUM PROSERPINACOIDES.

The plant upon which botanists have bestowed this somewhat unwieldy name is known more commonly as the Parrot's Feather. It is included in the Natural Family Haloragaceae, and is a beautiful subject for cultivating in greenhouse tanks and in aquaria. When planted in pots or pans beneath two or three inches of water, the slender stems spread themselves along the surface and raise their extremities about six inches out of the water. The stems and foliage are of a most attractive green hue. The leaves are feather-like, and are arranged in whorls of from four to seven. They are about one inch in length and finely divided into twelve to twenty-five hair-like segments. The plant branches freely and increases rapidly under favourable conditions. It is propagated readily by means of cuttings dibbled into pans of soil and placed in water so that the tops of the cuttings protrude above the surface. Myriophyllum proserpinacoides is a native of Chile. *T. H. Everett.*

FREESIAS FROM SEEDS.

The flowering season of the deliciously perfumed Freesias might be prolonged if seeds were sown to provide plants to follow those grown from corms.

Seeds of F. refracta alba may be obtained from any reliable seedsman, and it is a surprising fact that blooms obtained from seed-raised plants are much better than those from bulbs. The seeds may be sown towards the end of February or early in March. As seedlings of this subject will not withstand transplanting very well, it is advisable to sow the seeds in their flowering pots, which may be either five or six inches in size. The Freesia delights in a compost consisting of one part leaf-mould, one part sand, and a little well-decayed manure, mixed well and passed through a fine sieve.

A quantity of coarse mould should be placed in the seed pots and then covered with about an inch or more of the compost. Sow about four seeds in a five-inch pot, and seven in a six-inch one, and cover them to a depth of half-an-inch with fine compost. The seeds will germinate best in a cool house, and no harm will be done should the temperature rise to 70° or 75° through sun-heat in the early stages, but later, the plants should be kept cooler. In about three or four weeks from sowing, tiny blades of "grass" will commence to appear through the surface of the soil, and at this stage plenty of air, without draughts, should be admitted whenever possible.

By the middle of May the seedlings should be ready for removing to a cold frame, where they will make plenty of headway provided they are protected from frost; when all danger of frost is over, the pots may be placed in the open on an ash base.

Freesias, in a natural state, are great lovers of water, and are often found growing on the banks of a running brook or stream. This being so, they should be grown under as nearly natural conditions as possible. They require watering frequently, but beyond this and the removal of weeds, they need no further attention.

As a rule, it is safe to estimate that the plants will flower in six months after the seeds were sown, although some may bloom earlier. So soon as the buds appear it is time to remove the plants under glass.

Thus, it will be seen that, where a succession of sowings is made, at intervals of three weeks, one may have a continuous supply of Freesia blooms from August onwards, until the plants from seeds are succeeded by those grown from corms potted up in summer or autumn.

The later-sown batches may be left out-of-doors until the end of September, while, to develop the growths and increase the size of the flowers, weak liquid manure should be applied twice a week. *G. B.*

JAPANESE CHRYSANTHEMUMS FOR LARGE BLOOMS.

The popularity of the large-flowered Japanese Chrysanthemums was evident at the N.C.S. Exhibition, held at Westminster on November 1 and 2 last, when many enquiries were made by amateurs who were anxious to attempt the cultivation of exhibition blooms. Those exhibited by the President of the Society were models of perfection, and proved that the exhibiting of large blooms in vases is a much more attractive way to display their charms than the more widely practised method of staging the blooms on boards. To display the full beauty of the flowers, it is necessary that the staging be no higher than twelve inches. The arrangement of three blooms in a large vase is ideal, and a table of selected colours makes a very attractive display.

Garden owners sometimes discourage cultivation for specimen Chrysanthemum blooms, under the mistaken idea that the growing of these entails much more labour in comparison with decorative varieties, and that the effect, from a decorative point of view, is fleeting. Most gardeners realise the decorative value of large Japanese blooms for grouping in the conservatory and appreciate their lasting qualities. They are full of interest, and attractive from the time the buds show colour until long after they have reached their best.

Although many excellent new varieties are being sent out by raisers, a few old favourites are difficult to dispense with, notably, Mrs. Gilbert Drabble, W. Rigby, Lady Talbot, Mrs. Algernon Davis and Mrs. R. C. Pulling. One of the finest varieties in commerce, T. W. Pockett, was not shown extensively at the show mentioned above. Probably this was due to the early date on which it was held. This is a reliable variety in the eastern and midland counties, but not always a success in the west of England. Its tendency to coarseness may be overcome by stopping the plants during the last week of March and securing second crown buds. Grown in this way, the flowers have lasting qualities, in a cut state, second to none; it is therefore a desirable variety to grow where large flowers are in demand for cutting.

Majestic and its two sports are, perhaps, the three most popular varieties in cultivation, and appear in practically all exhibits, wherever a show is held. In order to obtain buds which will develop in time for the November shows, these varieties require stopping about mid-April. This also applies to Mrs. G. Drabble, W. Rigby and Princess Mary. Good yellow Japanese Chrysanthemums are plentiful. In addition to those already mentioned, we have the newer varieties Charles Davis (1928), and Lady Miller, both first-class and quite distinct. Really good crimson sorts are not so plentiful; for colour, Mrs. G. Monro, jun., is an easy first, but it lacks size. Thalia, a recent introduction, will be grown largely on account of its vigour, increased size and reliability. Birmingham is of good form and is a solid, well-built flower, while a good, reliable white variety to grow is Mrs. Arthur Brown, which may be allowed to break naturally, securing the first crown buds. Mrs. B. Carpenter is rather like its parent, Mrs. Algernon Davis, but is very popular. These varieties, together with Julia, are best propagated somewhat later than the majority of Japanese Chrysanthemums. The first crown buds may be secured if cuttings are inserted late in December and allowed to break naturally. For decorative purposes these varieties may be propagated early in March and the first bud secured. Seven-inch pots should be large enough for the final accommodation of these late-rooted plants.

Marjory Woolman, Mrs. Peter Murray and Mrs. M. Sargent are dwarf growers and, like the three Majestics, are capable of being satisfactorily housed on side stages or in other positions where head-room is limited.

Most varieties require a long season of growth, a few exceptions being mentioned above, and propagation should be effected during the second week of December. Good, sturdy root-cuttings, about three inches in length, should be inserted about four in a three-inch pot, in a mixture of loam, leaf-soil and sand. The cuttings should be watered in with a fine-rose can and placed in a propagating frame, in a house with a temperature of 48° or 50°. The frame light should be turned each night and morning to dispel moisture, admitting a little air during the night period. Treated in this manner, cuttings should root in about three weeks, when they may be removed from the frame. When a few weeks have elapsed they should be ready for potting singly into three-inch pots. From February onwards the plants should thrive in a light, airy pit, where a little heat is available to guard against frost and damping-off. Air should be admitted whenever the weather conditions permit. By early April the plants will require a shift, the larger into six-inch and the weaker into five-inch pots.

The soil used for the April potting should consist of three parts good fibrous loam, one part leaf-soil, a quarter-of-a-part manure from an old Mushroom-bed, and a quarter-of-a-part sand and lime rubble. A four-inch potfull of bone-meal may be added to each bushel of compost and rather more than this quantity of wood-ash. Mixing the soil should always be done some days before it is required for use. The plants require fairly firm potting at this stage, and may be returned to the pit or a cold frame, and kept rather close for a day or two. As they are potted, a small stake should be supplied to each plant. Water need not be applied for a day or two, when all the plants should be watered thoroughly. As the roots develop, air may be admitted more freely, and gradually the lights should be removed during the day-time whenever the weather is mild. By the second week in May it is safe, in most districts, to stand the plants out-of-doors, but some provision should be made for overhead protection in case of frosts or hail.

By early June the plants should be potted into the receptacles in which they are to flower. Strong plants will need a pot having a diameter of ten inches, or possibly eleven inches. The soil for this final potting may be left in a rougher state than that used in April. A smaller proportion of leaf-soil may be added, but otherwise the mixture should remain unchanged. A good open space, with an ash base, is the most suitable for the growing quarters. Wires should be strained along each row, to support the plants against winds.

Crown buds will begin to show early in August and these should be secured, removing all side growths in their young stage. From this time onwards, constant attention should be given to feeding. The aim should be to build up strong buds before the time for housing arrives. It is better to apply light feeding regularly than to give strong doses of liquid or other manure at irregular intervals. Clear soot-water, poultry manure in solution and drainings from the farm buildings, are all good; and may be diluted and applied in turn, a week at a time. The diluted liquid manure should be similar to brandy in colour. A top-dressing of an inch of compost similar to the potting mixture, omitting bone-meal in favour of a special Chrysanthemum fertiliser or Clay's manure, should be applied late in August, and made firm with a rammer. For about ten days after applying the top-dressing clear water only should be used for watering, but later the applications of liquid manures may be renewed and continued up to the time of housing the plants. Buds showing colour need protection from frosts or heavy dew, or they will eventually show signs of damping. For the midlands, September 20 is a good time to commence housing the forward plants, and those with buds not quite so well developed may be brought under cover by October 1.

When first housed, conditions should be maintained similar to those out-of-doors; all doors and ventilators should be left open day and night. If dry, the path may be sprinkled with water. Later, the damping should be discontinued and ventilation adjusted to suit the weather conditions. A night temperature of 45° to 48° should be aimed at.

As the blooms proceed to develop, a little warmth in the pipes is desirable and will counteract the tendency to damp, but air may be admitted always through the leeward top ventilators, no matter what the weather is like, except in the case of dense fog. As a preventive against mildew, the plants should be sprayed with sulphide of potassium, one-third-of-an-ounce to a gallon of soft water being the necessary strength; as this discolours paint, it should not be used on plants after they are housed. Flowers of sulphur may be used to check any signs of outbreak while the plants are under glass. October sunshine sometimes scorches the petals, and a thin layer of some shading material is needed, especially on the east side of a span structure. The shading should not be so dense as that usually applied for the protection of greenhouse plants in summer. *Charles Hodgson.*

HARDY CYCLAMENS.

The Cyclamens are very popular in gardens, and we may easily understand why. Some of them have been cultivated since the sixteenth century. Mr. Baker published a description of them in *The Gardeners' Chronicle* of March 1883, and Professor Hildebrandt published, in 1898, a good monograph of them; then Pax, in *Engler's Pflanzenreich*, published a monograph in 1905. Therefore we are well informed about this fine genus, but to know the plants well one must cultivate them.

Cyclamen tubers are generally hardy, and sometimes they become very big and very old. In *Gard. Chron.* (March 6, 1920) a correspondent from Glarus, Switzerland, contributed a photograph of a pot Cyclamen europaeum he had grown about sixty years, and Mr. Purpus of Darmstadt wrote in the *Deutsche Gaertner Zeitung* that he knew some tubers more than a century old. In the *Garden Magazine* (January 21, 1893), Mr. Stapely, of Staplehurst, Kent, stated that he had some bulbs of C. persicum older than forty years, each bearing more than five hundred flowers in a year.

All, or almost all, Cyclamens prefer calcareous to acid soil and sometimes they are very deep in the soil. All like a well-drained position, as the tubers rot easily. The seeds are covered with a kind of honey, and the ants are their distributing agents. We may find that some seeds, and these are rather heavy, have been transported seven, or even more than eight metres away from the plant.

At the end of January we have an underwood bright with the carmine flowers of Cyclamen coum and C. ibericum, all mixed together by cross fertilisation, which is a plague for the seed-grower. Some of our C. ibericum, from Tiflis, have to be isolated under glass in order to retain their character; it is also the same with C. coum. Out-of-doors they cross and multiply with the greatest ease. Those belonging to the small group of winter-flowering, oriental kinds are, C. alpinum, C. coum and C. ibericum; C. Atkinsii is a cross between the two last. All are dwarf, with roundish, kidney-shaped leaves contemporary with the flowers; the blooms are bright carmine with a dark spot, but they vary considerably.

C. coum is the Grecian type, reaching Turkey and Armenia. It appears to be near C. ibericum, but its leaves are dark green on the upper side and deep reddish-brown below; their form is the same, but they are entirely smooth on their periphery, while those of C. ibericum are maculated on the top side and have small teeth, or are irregularly broken into minute, acute angles at the end of the nervures. The flower divisions are elongated, longer and narrower than in C. ibericum, and the sepals are not so contracted at their base as they are in C. ibericum.

C. ibericum flowers here earlier in January than C. coum, and both are inodorus and have bright carmine flowers with a dark spot at the base of the division.

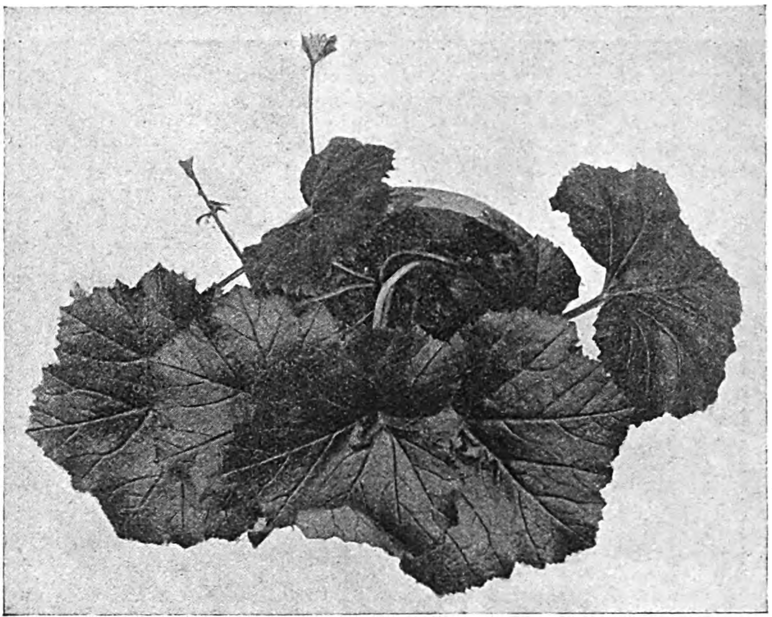

FIG. 52.—CYCLAMEN ROHLFSIANUM.
(Showing form of foliage.)

C. alpinum is the mountain form of C. coum (see *Gartenflora*, 1892, p. 526), and has the smallest leaves of the group. These leaves have the periphery still more irregular than in C. ibericum and strongly maculated (see Hildebrandt's *Monograph*, plate 3), and the petals broadly ovate, acute and shorter. The flowers have a red pistil and are of a rather reddish-carmine. It grows on the high mountains of Anatolia, near the snowfields, just at the melting edge of the snow.

C. Atkinsii has the intermediate characters of the parents and its flowers vary from white to deep rose, with dark marks at the base of the petals.

In March, we begin to enjoy the sweetly-smelling C. repandum (vernum), with light rose-carmine flowers. The leaves come up with the flowers and are ovate-deltoid, cordate at their base, dentate, and slightly whitish-zoned. It is a Mediterranean species, growing in woods in the south of France, Italy and Greece. Its brother, C. balearicum, from the south-west part of France, Spain and the Balearic Islands, is much smaller; its tuber is not bigger than a large Pea and buried very deeply in the gritty and mossy soil. The leaves are strongly maculated with white; they are small and strongly dentate, appearing and disappearing from March to the end of May. The flowers are small, pure white and very fragrant.

C. libanoticum is a rare plant, found some forty years ago by Hartmann on the Lebanon. The leaves are autumnal, obcordate, dentate and crenate, with a white zone; flowers vernal, pale rose, with a deep carmine spot, and very fragrant. These are, with C. latifolium (persicum), which is not hardy with us, the vernal Cyclamens.

In the month of July, C. europaeum begins to bloom. This is the oldest known of our garden Cyclamens. It is one of the glories of the limestone mountains surrounding Geneva, but is not found everywhere, remaining confined to hot, dry and shady, stony slopes. In the north-east of Italy, and especially in the Garda region, and in the Trentino, it grows everywhere. At the very base of the Tombea, near Storo, it grows in the full sun along the road, on limestone pierriers, while in the Carinthian Alps, above Klagenfurth, I found it last year adorning the fresh meadows like a Colchicum. It flowers there with such abundance that, viewing it from far away, I really believod I saw a Colchicum meadow! The leaves of C. europaeum are evergreen, more or less maculated, deep red below (in the white-flowering variety the underside is green), and the very sweetly-fragrant flowers appear in autumn. We have, however, at Floraire, some in flower from July until the end of November; their best position is between rocks in a shady or half-shady place.

C. neapolitanum is well-known and widely grown in England, and also its white variety. The tubers are very large, and the leaves come after the flowers. These leaves are very variable; hence the numerous names under which it is known. Mr. E. A. Bowles has some forms with very hastate, elongated, Arum-like leaves, and, naturally, as all those who know Mr. Bowles will understand, some tubers went into my pocket when I visited him. This is C. neapolitanum var. araefolium.

It is a pity that the flowers of C. neapolitanum have no fragrance, but, as it is, one may consider it as one of the good flowers for underwood in the autumn. The leaves come immediately after the flowers; it is a south European species growing always in shade.

I had obtained from Corsica a form with strongly maculated leaves, but it cannot be recognised as a type; I call it C. neapolitanum var. corsicum. C. graecum has big, red, and very irregular tubers and obovate leaves, strongly dentate, velvet green and maculate on the upperside, but very red below. The flowers are like those of C. neapolitanum, but rather larger. I obtained it from the mountains of Greece.

C. Jovis, named and sent out by Siehe, of Mersina, is an Oriental form of C. neapolitanum, with very elongated sepals and petals, narrowly lanceolate, and with filaments 1 mm. long (almost absent in C. neapolitanum); the leaves also are broader.

C. africanum is the Algerian form of C. neapolitanum, with very large tubers; the leaves appear in December, and are large, beautifully marbled with white, and strongly dentate; the flowers are produced in winter and are pale rose, with a carmine spot at the base; this form must be protected here.

C. cyprium is a very distinct species from Cyprus, with small, heart-shaped, marbled leaves (with an interrupted white zone), reddish-violet underneath, strongly serrate, and appearing just before the flowers in September. The blooms are inodorus, white or pale lilac, with acutely dentate, almost laminate petals.

C. cilicium, from the Orient, develops its leaves with the flowers; they are sub-orbicular, entire, with basal lobes; the flowers are pure white, and fragrant. It belongs to the European group.

In 1898 the Russian botanist Alboff brought me from Abchasia two big tubers of C. europaeum, which he labelled Colchicum (C. ponticum). This has very thick, dark-green leaves, hastate and acute, and bigger flowers than our common type. It seems to be the same thing as C. pseudo-ibericum. Alas, I have lost it for twenty years!

The strangest of all the Cyclamens is C. Rohlfsianum (Figs. 52 and 53), from the Cyrenean desert. It has very large leaves, not only dentate and crenate, but even lobate, beautifully marbled on the very bright upper surface and dark red underneath; these appear in late autumn, just before the flowers. C. Rohlfsianum was found in 1893, and brought into the Boissier's Garden by Mr. Barbey-Boissier, where it flowered, but it has since been lost. In the year 1917, I tried to get a lot of tubers from Bengasi, but they were held up on the way (it was war time), and they took four months to reach Floraire. Alas, they had rotted and were of no use. Then I wrote for seeds, which came to hand and germinated; but we, unfortunately, left the seedlings exposed, and they were all frozen. New seeds have been obtained and a few plants raised. Then my friend, Dr. Raggioneri, sent me from Florence some very big tubers he had secured (one measured 12 cm. broad and 9 cm. thick, and weighed 250 grammes). These rooted successfully and flowered well with us, but gave no seeds, despite artificial fertilisation.

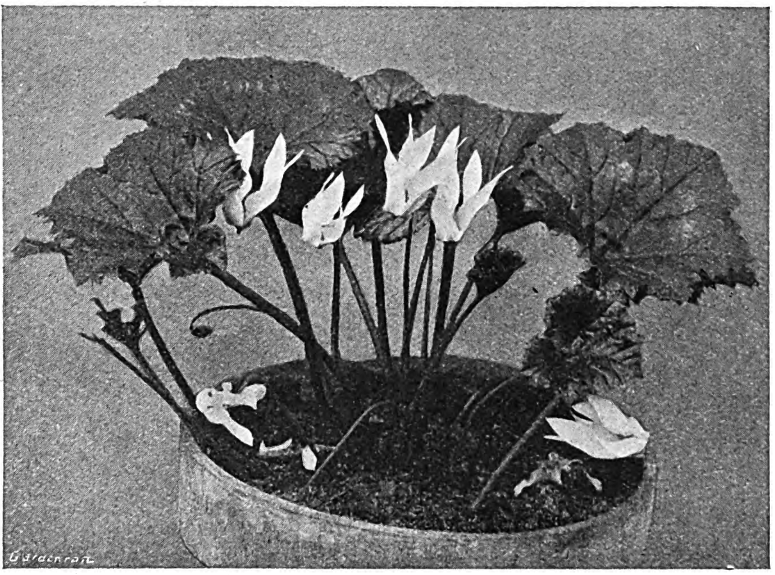

FIG. 53.—CYCLAMEN ROHLFSIANUM.
(Showing flowers and foliage.)

The flowers of C. Rohlfsianum are said to be fragrant in the wild state, but here they are almost inodorous; they are of medium size, light rose, with a carmine spot at the base; their special character is the long, acute anthers which extend beyond the petals like those of a Dodecatheon. This very rare plant grows between the large blocks of stones which form the walls which protect the oases against the encroachment of the desert. It must be protected here in winter. *H. Correvon, Geneva.*

BEGONIAS FOR SUMMER BEDDING.

BEGONIAS, as represented by the tuberous-rooted and fibrous-rooted varieties, are indispensable for summer bedding, and are being used increasingly for this purpose, either alone or in conjunction with light and elegant foliage plants; they have, in many instances, taken the place of the bedding Pelargonium. The reason for this popularity is not far to seek. Tuberous-rooted Begonias may now be had in a wide range of colours; they take up no valuable space in greenhouses during the winter months; they are cheap, and if it is necessary to purchase dry tubers, they may be obtained true to colour; while they may also be raised easily from seeds, which should be procured from a reliable source.

When dealing with dry tubers, those from seeds sown the previous year are the best, although good results may be obtained from tubers several years old; in fact, it may be, and often is, necessary to cut up the old tubers, or secure cuttings from them, to increase choice, named sorts. The usual practice is to start the dry tubers into growth in heat, afterwards placing them in pots; this method, especially if large quantities are required, entails a lot of labour, and in my experience is unnecessary, in fact, better results are obtained by planting them out in cold frames, in a compost of good loam and plenty of well-decayed stable manure or leaf-soil, with enough sand added to keep it open and porous; it is important to plant them in a fairly loose, free-rooting medium.

If it is desired to grow them by this latter method, the dry tubers may be planted from the middle of March to the beginning of April; if the frames are kept close and moist the tubers should start quickly into growth, the plants, when hardened-off, being ready to plant out so soon as weather conditions permit, *i.e.*, about the beginning of June.

If so desired, these Begonias may be raised from seeds and the resulting plants bedded-out the same season. For this purpose, seeds should be sown about the middle of February, in a temperature of 60°. The seed-pans should be prepared and the compost watered with a fine-rosed can some hours before it is desired to sow the fine, dust-like seeds. These should be distributed evenly over the surface, after which the receptacles should be covered with a piece of glass, and kept shaded until germination takes place. Subsequent cultural treatment consists of transferring the seedlings to pans or boxes of light compost and, as they increase in size, giving them frequent shifts into other boxes until they are large enough to be planted out in cold frames as advised for dry tubers; it is important that they be kept growing steadily, without any check.

For bedding purposes the single-flowered varieties may be regarded as the most suitable. There are, however, other tuberous-rooted Begonias which are suitable for bedding purposes, the most important, perhaps, being the Worthiana group, in which the best-known are B. Bertinii, B. Bertinii nana, and the newer salmon-pink variety, Madame Mandrot.

There is also a group known as multiflora, which includes a number of dwarf, free-flowering varieties, with double or semi-double flowers; these are generally very free-flowering, and are charming for growing in association with light, elegant foliage plants. A few of the best in this section are Count Zeppelin, Lafayette, Burgomaster Max, Phosphorescent, Flamboyant, and Mrs. Helen Harms, the last-named being the best yellow-flowered variety; Evelyn Tavenet, Alice Crosse and Commander Felix are three new pink varieties of promise. All the above-named varieties must be propagated by cuttings, which should be secured when they are three or four inches in length.

There is, however, a group of Begonia Lafayette hybrids, the members of which may be raised from seeds; they have fine, dark-coloured foliage and brilliant, scarlet flowers.

Begonia fulgens and B. gracilis are both excellent bedding plants, but they are not obtainable in quantity. The former may be raised from seeds, while the latter produces numerous bulbils in the axils of the leaves and stipules, and these afford a ready means of increase, Begonia gracilis is more generally known as B. Martiana, and should not be confused with the B. semperflorens varieties, which form a section referred to by continental growers under the name Martiana.

The fibrous-rooted semperflorens Begonias, of which there are many varieties, are ideal for summer bedding, as they appear to be indifferent to the vagaries of the weather, remaining effective throughout hot bright spells or dull, wet and sunless weather. It is surprising they are not used more generally for summer bedding arrangements. They are raised easily from seeds, the different varieties coming true to character; they should be sown and treated in exactly the same way as advised for the tuberous-rooted varieties. When transferred to the frames, care should be taken to prevent the young, tender foliage from being scorched by the sun, therefore they should be shaded after being watered overhead. If it is not desired to raise these varieties from seeds every year, stock plants may be kept over the winter and propagated by means of cuttings early in the year. For this purpose it is important to secure basal cuttings, for although flowering shoots root readily, they seldom break into growth. Some good semperflorens varieties which may be depended upon to come true from seeds, are Pink Profusion, Prima Donna, Glory of Erfurt, Luminosa, Broadcast and Bonfire; the last-named has dark foliage and brilliant red flowers, which are really dazzling in bright sunshine.

All Begonias enjoy a rich, free root-run, and the beds for them should be enriched with plenty of well-decayed farmyard manure or leaf-soil. When used for bedding purposes, they are seldom troubled by diseases or insect pests. They flourish under cool and moist conditions, and are therefore to be recommended for planting in the northern parts of the country. *J. Coutts, Kew.*

WATER GARDEN.

BUTOMUS UMBELLATUS.

ONE is often inclined to overlook the members of our native flora, in the quest for plants from overseas. A good example is to be found in the above subject. Although common in many shallow pools or on canal banks, we do not often see it used in water gardens. Yet, with its mass of lax, green leaves, between two and three feet high, above which tower the tall flowering stems bearing umbels of pale pinkish, star-shaped flowers, it is a desirable subject to plant on the margins of large sheets of water. It grows equally well in the bog garden, but, like all aquatics, is so vigorous that it must be kept within bounds. *F. W. G.*

PROPAGATION OF RHODODENDRONS BY CUTTINGS.

(*Concluded from p.* 79.)

An excellent plan, where the right type of wood for cuttings is difficult to obtain, is that of potting up a good stock plant and placing it in gentle heat under glass, when a supply of good cuttings will become available readily.

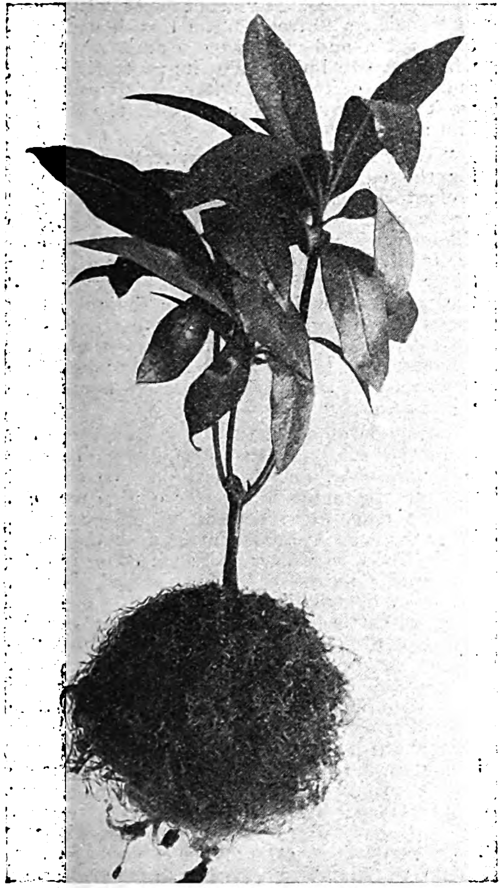

FIG. 54.—RHODODENDRON OCCIDENTALE HYB. Inserted June, 1928; photographed January, 1929.

The next group consists of plants which are more vigorous in habit, possessing larger leaves, belonging botanically to various series and embracing many of our finest early-flowering Rhododendrons, viz., R. praecox, R. emascalum, R. Rosy Bell, R. racemosum and R. spinuliferum, besides many of the free-flowering members of the Triflorum group, such as R. yunnanense and R. chartophyllum forma praecox. Of these, it is essential that the hybrids, such as R. praecox and R. Rosy Bell, be raised vegetatively, and it is a curious fact that any Rhododendrons possessing, as these two do, R. ciliatum blood, are particularly easy to raise from cuttings.

The cuttings should be about three inches in length and of the current year's wood, with a slight heel, and inserted in a warm frame in a mixture of peat-moss litter and sand, in late June or July, where they will produce sufficient roots to be ready for potting up in from four to six weeks. Although not so necessary with the evergreen plants in this group, it is essential that the deciduous kinds, such as R. emascalum, R. mucronulatum and R. praecox, should be ready for potting sufficiently early to enable them to make new growth before the ensuing winter approaches; I always endeavour to keep them growing until December.

It is, however, the large-leaved evergreen Rhododendrons that are most difficult to raise from cuttings, and it is with particular reference to these that I write these notes. A few years ago, I rooted, with great success, a large batch of cuttings of R. Cunningham's White (Fig. 41, p. 79), a very useful old hybrid dating from 1830, which possesses R. caucasicum blood.

On October 1, 1928, I made up a warm frame of peat-moss litter and sand, which was kept at a temperature of about 65°. to 70°, and decided to fill it with a representative set of hybrids and varieties possessing R. caucasicum blood. Batches of the following were inserted: R. caucasicum var. pictum, R. Cunningham's White, R. Cunningham's Sulphur, R. Nobleanum (Fig. 55), R. Nobleanum var. venustum, and R. Rosa-Mundi. The wood selected for cuttings was that of the current year's shoots, about three to six inches long, and made at the junction of the current and previous years' growth. Early October was selected as the best time for insertion, with the idea that the cuttings would produce roots during the winter, and therefore have a very long growing season ahead in 1929.

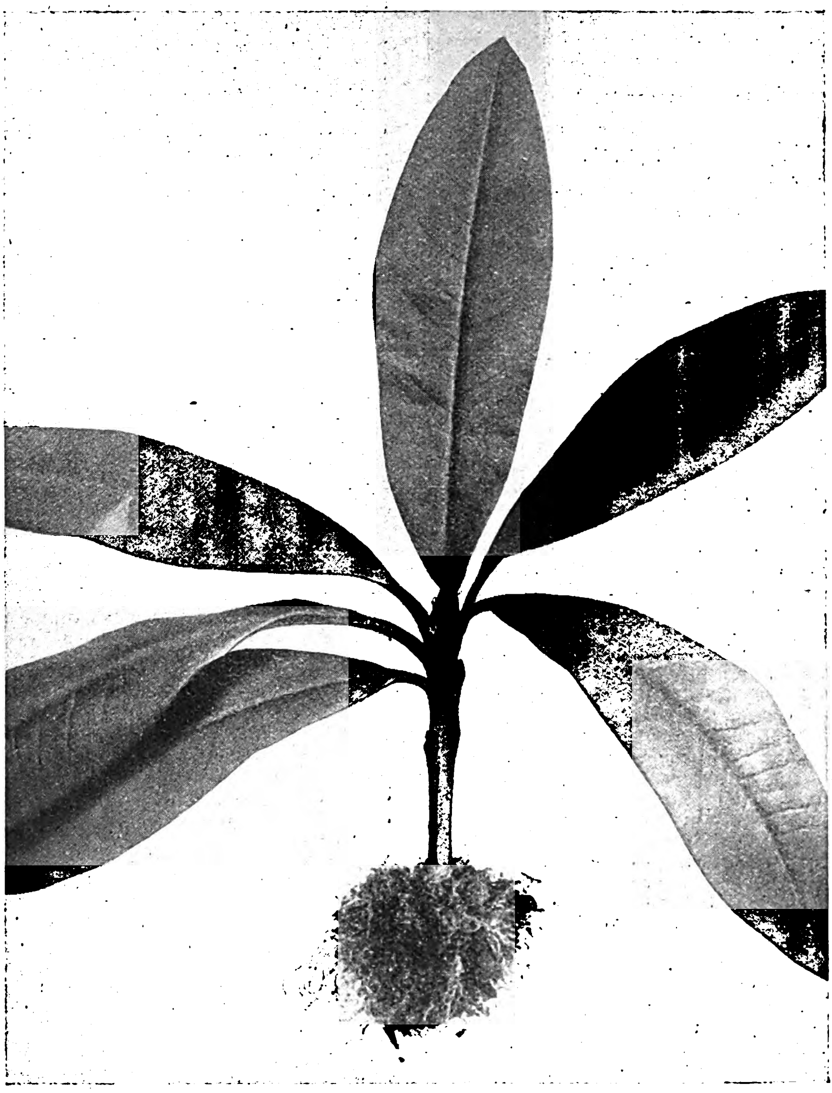

FIG. 55.—RHODODENDRON NOBLEANUM. Inserted October 1, 1928; photographed January 14, 1929.

On January 14, 1929, these cuttings were examined, with the following results:—There were ready for potting-up, over ninety per cent. of R. Cunningham's White; about eighty per cent. of R. caucasicum var. pictum; fifty per cent. of R. Rosa-Mundi; and a smaller percentage of the others, with the exception of R. Cunningham's Sulphur, where a few of the cuttings had rooted but not sufficiently to pot up.

Inserted at the same time was a batch of a typical hybrid Rhododendron, viz., R. Isabella Mangles, but up to the time of writing none has produced roots.

The conclusions arrived at are that Rhododendrons possessing R. caucasicum blood may be raised from cuttings; and the further behaviour of the plants already raised will be watched with interest. R. Cunningham's White, I may add, has already proved itself and grows away quite freely, producing flowers at a very early age. The propagation of the Azalea division of the genus by cuttings should be tried more frequently as, too often, one sees Azalea gardens ruined by the suckers of the stocks outgrowing the varieties grafted upon them.

Cuttings of Azaleas inserted in June, so soon as the wood becomes firm enough to handle easily, will root quite successfully. They should be made about three inches long, with a slight heel of older wood, and inserted in a mixture of peat-moss litter and sand, with a temperature of about 75°.

The great point in successfully raising Azaleas from cuttings is to get the young plants into growth the same summer as the cuttings are inserted; if they are inserted in June, they may be potted up in July, and will continue growing until December, and, after a short rest, should start into growth again early in the New Year. (See Fig. 54: R. occidentale hybrid, inserted June, 1928, photographed January, 1929). For the first few years, Azaleas raised from cuttings are inclined to grow slowly, but they eventually form shapely, free-flowering bushes.

The Kurume Azaleas and obtusum varieties are very easily raised in the same way as the above, and will produce very good flowering plants in from three to four years.

Among Rhododendrons, in addition to those already mentioned, which have been successfully raised from cuttings, are R. Augustinii, R. Broughtonii var. aureum, R. Chapmanii, R. hypolepidotum, R. moupinense, R. repens, R. virgatum, R. Williamsianum, and, of course the race of warm greenhouse plants commonly called the Javanese hybrids. A clerical error occurred in my previous notes; the title under Fig. 39 belongs to Fig. 40, and *vice versa*. *F. P. Knight, Royal Botanic Gardens, Kew.*

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AN ATTRACTIVE EVERGREEN.

I AM prepared, in spite of the discredit of the archaeologist, to speak a good word for the Ivy. True, it has been charged with the habits and vices of a vampire, and accused of battening on the blood of aged and decrepit buildings. But it is equally true that it has kept off the death-sweat from another, and absorbed the damp which threatened to make it crumble and decay. It is said to force its rootlets into the joints and marrow, and loosen the members, but has it not also bonded the skeleton together, and prevented the bones of an old castle, or the stones of an ancient abbey, from falling apart? It is accused of garrotting the very tree by whose friendly aid it has climbed to eminence, but has it not beautified the unsightly, and thrown the green mantle of its polished foliage over many an uncomely thing, and made it an object of delight? Concerning the Ivy, it may be said that a good quality may be set over against every doubtful character, and a tribute may be paid to its virtues whenever its vices are held up to scorn.

I find its leading and most conspicuous virtue in its flowers. These are so little-known to many people that my choice may be regarded as a freak. The flowers which are most sought after are showy; they come in spring and summer, flourish in the sunshine, lend themselves to arrangement and display, and win us by their familiarity. The Ivy, on the other hand, is coy. It blooms in winter when other blossoms are rare, often continuing in perfection from October or November through the festive season of Christmas, and well into the New Year. The flowers yield much welcome nectar, and by spreading over the warm side of some neglected wall, as Knapp long ago remarked, or overtopping some sturdy hedgerow, the sunny bark of the broad Ash or the rugged cortex of the Oak, provide a universal banquet for the insect race: "The great black fly and its numerous tribe, with multitudes of small-winged creatures, resort to them; and there we see those beautiful insects, the latest birth of the year, the Admiral and the Peacock butterflies, hanging with expanded wings like open flowers themselves, enjoying the sunny gleam, and feeding on the sweet liquor that distils from the nectary of this plant." And this at a time when fare is hard to find, and starvation looks the insects in the face.

Another peculiarity of the Ivy is that it refuses to spend thought on its reproduction so long as it has work to do for others. Has it never struck the reader that the plant begins to blossom only when it can no longer climb? Plant it by an unsightly wall or cause it to grow near an ugly stump or ancient ruin, and it will work assiduously to cover them over with beauty; but the years may come and go, and the seasons for flowering and fruiting may pass, without ever turning it from its task, or causing it to turn aside from the path of duty to serve its own ends. Is it any wonder that our modest evergreen has from time immemorial stood as the symbol of a generous friendship and an unwavering fidelity? "Thus does it attach itself even to the destitute; and when death has smitten its protector, it again restores him to the honour of the forest; when he no longer lives it causes him to revive, by decorating his pallid branches with garlands of flowers and festoons of perennial verdure."

In the next place, I may remark on the happy way in which the plant introduces variety, which is another term for beauty and charm, into its effects, by modifying the contour of its leaves. Let anyone pluck a series of these and trace their outlines. The variation is marked in many ways. Those leaves which are near the ground will probably prove dissimilar from those which are on the rambling shoots, and those again which surround the clusters of flowers and fruits will differ from the rest. The shapes are rarely duplicated, and the venation resembles the streams which meander at their own sweet will through meads which they render green and fertile.

Or shall I dwell on the appeal which the Ivy makes to us by reason of its bearing rich clusters of purple-black fruits at a season when all other dessert for the birds is at a premium, and when many would have to go without a dinner but for the timely provision which this forethought secures for them? It is not the friend who offers us aid in days of plenty, so much as the one who succours us in the hour of need that wins our deepest affection. A brother is born for adversity, and a friend loveth us even in the winter of our discontent. And the Ivy is like these.

It has often been remarked that there are at least two sides to every question. One side is expressed by a now forgotten poet—Langhorn—who wrote somewhat malevolently that—

> "No flower can bear the Ivy's shade,
> No tree support its cold embrace."

It may readily be conceded that it is injurious to young growing timber by reason of the check which its clasp imposes on its expansion, and by sapping the soil of nutriment, but it will also be agreed that if the Ivy were subjected to less general persecution great benefit might ensue to the agriculturist and sportsman.

The Ivy is not a parasite as many suppose; parasites are those which live on pabulum prepared by others for their own nutriment. Parasites cannot produce green leaves or manufacture chlorophyll. Closely as the Ivy may embrace the Oak, its rootlets do not sap the energies of the tree, or its claspers suck its blood. It flourishes on a wall which can afford it no nourishment, and if the plant which climbs about a tree is cut or injured it dies, which it would not necessarily do if it were able to gain a livelihood either in whole or part from its supporter. It may be stated of the Ivy, it recompenses the strength it borrows with the grace it lends, and recalls the spouse in the Canticles leaning on the arm of her beloved.

The Ivy was known to the Roman Pliny, who tells us that at his seat in Tuscany the trunks of his Plane trees were entwined with it in such a way that they were often roped together. This beautiful habit of throwing out trailing shoots has led to the plant being used in some places for hedges, after the manner of the Smilax or Sarsaparilla. It is specially useful for covering trellis work in spots where other plants refuse to grow. Plots of ground in the neighbourhood of buildings and factories which would otherwise be unsightly may be rendered beautiful by adopting the hint first given, I believe, by Curtis. "Few people," he remarked many years ago, "are acquainted with the beauty of Ivy when suffered to run up a stake, and at length to form itself into a standard; the singular complication of its branches, and the vivid hue of its leaves, give it one of the first places among evergreens." I have seen it so employed in the Black Country, and in the neighbourhood of manufacturing cities, with splendid effect, and wonder that the custom of growing it thus is not adopted more widely.

A further plea for the Ivy may be based on the fact that it is much favoured by the birds. The habit of its leaves enables them so to droop and arrange themselves that a nest may be completely hidden from view, and I have often had the joy of seeing a young brood safely brought up in such a nursery. The thrush and blackbird, robin and sparrow are among the birds which love to build under its protecting shade, and the editor of Withering's well-known work on botany supplies us with the following hint:

"We would suggest (he writes) as a motive for the cultivation of the Ivy to those who prefer to a cheerless, death-like silence the vocal grotto animated with life and enjoyment that the shelter it affords from wintry storms, the berries as food during the most inclement seasons (since they remain uninjured by frosts), and the covert in which to secrete their nests and rear their young, prove most attractive to the feathered race, and will often reverberate the soft cooing of the dove, the mellow notes of the thrush, and the varied trill of innumerable minor songsters."

It may be objected to the cultivation of this attractive evergreen that its foliage is nauseous and poisonous, and therefore to be eschewed where cattle, ovine, bovine or equine are kept. This is true, more or less, of all evergreens. Were they usually toothsome morsels they would be devoured in winter and soon cease to exist. Hence this means of self-preservation. It is, however, a striking fact that while one often hears of cattle being poisoned by the Yew and other plants, it is a rare thing to learn that injury has been sustained through eating Ivy. Some very interesting facts have been placed on record in this connection, and from these the following may be particularly noted. Horses and sheep eat the foliage without suffering injury, although cows and goats usually refuse it. It has been stated that sheep seem to prefer Ivy to grass in the winter, devouring it eagerly, while deer will also feed upon it. Some farmers have been wont to strip off the leaves as food for cattle when fodder is scarce, and even cows may then be induced to eat it. I think I have said enough to justify my title, and prove the Ivy an attractive evergreen. *Hilderic Friend.*

THE ALPINE LAWN.

THE article of Mr. T. Hay, in the issue of *The Gardeners' Chronicle* for December 22, 1928 (p. 491), on the "Camomile Lawn," followed by notes on the same subject by Mr. J. Comber and Mr. J. Fraser, in the issue for January 5 (p. 15), provide interesting suggestions and open up great possibilities for the variation of the composition and function of the lawn as it is known to-day. Doubtless, the grass lawn for the purposes of games cannot be improved upon, other than, perhaps, by the introduction of Camomile; but scent is ever a pleasing and intriguing character, and the list of plants given by Mr. Comber suggests a means whereby the ornamental grass lawn may be made to possess the added charm of fragrance, and the list may be extended to include many other sweetly-scented, low-growing herbs.

And this leads us to the consideration of what, for lack of a better name, may be termed the alpine lawn, the formation of which embraces untold possibilities. I think it was Mr. Clarence Elliott who first advocated this form of alpine garden, and it is, in my opinion, a distinct improvement on the alpine meadow for, whereas the grass on the latter has to be cut by midsummer, and the meadow is thereby shorn of most of its beauty, the alpine lawn, being composed of judiciously selected, prostrate, or low-growing plants—many of them scented—does not call for such harsh treatment, and may be so formed as to continue attractive throughout the year.

If the site selected for it, whether large or limited in dimensions, is undulating, or, better still, sloping gently down to ground kept moist by a small stream or pool, planted with low-growing, moisture-loving plants, such as the richly-coloured Oxycoccus macrocarpus, and the lovely Saxifraga granulata, together with its double form, also the double-flowered Cardamine pratensis fl. pl., the possibilities of producing a charming effect are enhanced considerably.

Then again, the alpine lawn need not be flat-surfaced, for, naturally, boulders should jut out here and there, and occasionally there may be clumps of taller-growing subjects, together with a few appropriate shrubs. The soil beneath the latter may be carpeted with such subjects as the dainty foliaged Cotulas—notably C. squalida,—Helichrysum trinervatum, and possibly the humble Linnaea borealis, which are partial to shade.

Among the subjects most suitable for forming the alpine lawn, the various forms of Thymus Serpyllum take pride of place, for they naturally form close carpets, are rapid in growth, and attractive both in flower and foliage, and have the added charm of fragrance, which is released when the plants are trodden under foot. The Camomile might well be employed, and another native plant which suggests itself is the Milk-weed, Polygala calcarea, abundant on the chalk hills of Surrey, which forms a close mat of deep green foliage, and produces small inflorescences in varying shades of colour, from almost pure white to deep bluish-purple. Associated with this subject in its natural habitat is the dainty little annual Linum catharticum, with tiny white blooms, and once this has been established it will appear with unfailing regularity each year. The Antennarias immediately suggest themselves for furnishing the alpine lawn, as do the low-growing Achilleas, especially the oft-praised A. × Lewisii, for the production of flowers late into the summer. There are several Acaenas, notably A. Sanquisorbae, which might be used to produce a variety of colour effects, while many of the Campanulas lend themselves admirably to this form of culture, and such alpine Pinks as Dianthus deltoides, in its several varieties, may also be included. The low-growing Potentillas, Dryas octopetala, several of the Androsaces, Globularias, Douglasia Vitaliana and Silene acaulis, are but a few of the subjects worthy of consideration when a selection of plants for the alpine lawn is being made.

The general arrangement of the plants requires careful consideration, for, naturally, many of the plants enumerated above are much stronger-growing than the others, and while the former may be allowed to merge together, they should be so arranged as not to smother the less vigorous sorts.

So the original conception of the alpine lawn, as it is termed, may be greatly improved upon. Gentians may be introduced, for many of them, especially G. verna, we are informed, are naturally found growing in conjunction with other prostrate subjects, while it is also suggested that some of the difficult Primulas might be grown with better prospects of success under the conditions embodied in the alpine lawn, provided, of course, their associates are specially selected and not likely to prove overpowering.

Again, there is the question of introducing bulbous subjects, of which there are many which might be employed. At the summit of the slope, where it is warm and dry, the bright crimson Anomatheca cruenta might be planted beneath subjects of not too matted growth, while the Hyacinths, Chionodoxas, Muscaris, Crocuses, both spring- and autumn-flowering, bulbous Irises, notably Iris reticulata; miniature Narcissi; Scillas and, possibly, Tulipa species, are a host in themselves, all suitable for associating with carpet plants, which will form mattresses for the blooms when they are beaten to the ground by rain, and so prevent their beauty being marred.

So it may be seen, from the meagre suggestions given above, that the alpine lawn embraces great possibilities as a charming feature of the garden, while the labour required for its upkeep, once it has been established, is inconsiderable, as it will need very little attention for a number of years, if cleaned over annually and occasionally top-dressed with good compost, care being taken not to allow strong-growing weeds to establish themselves. *M. W.*

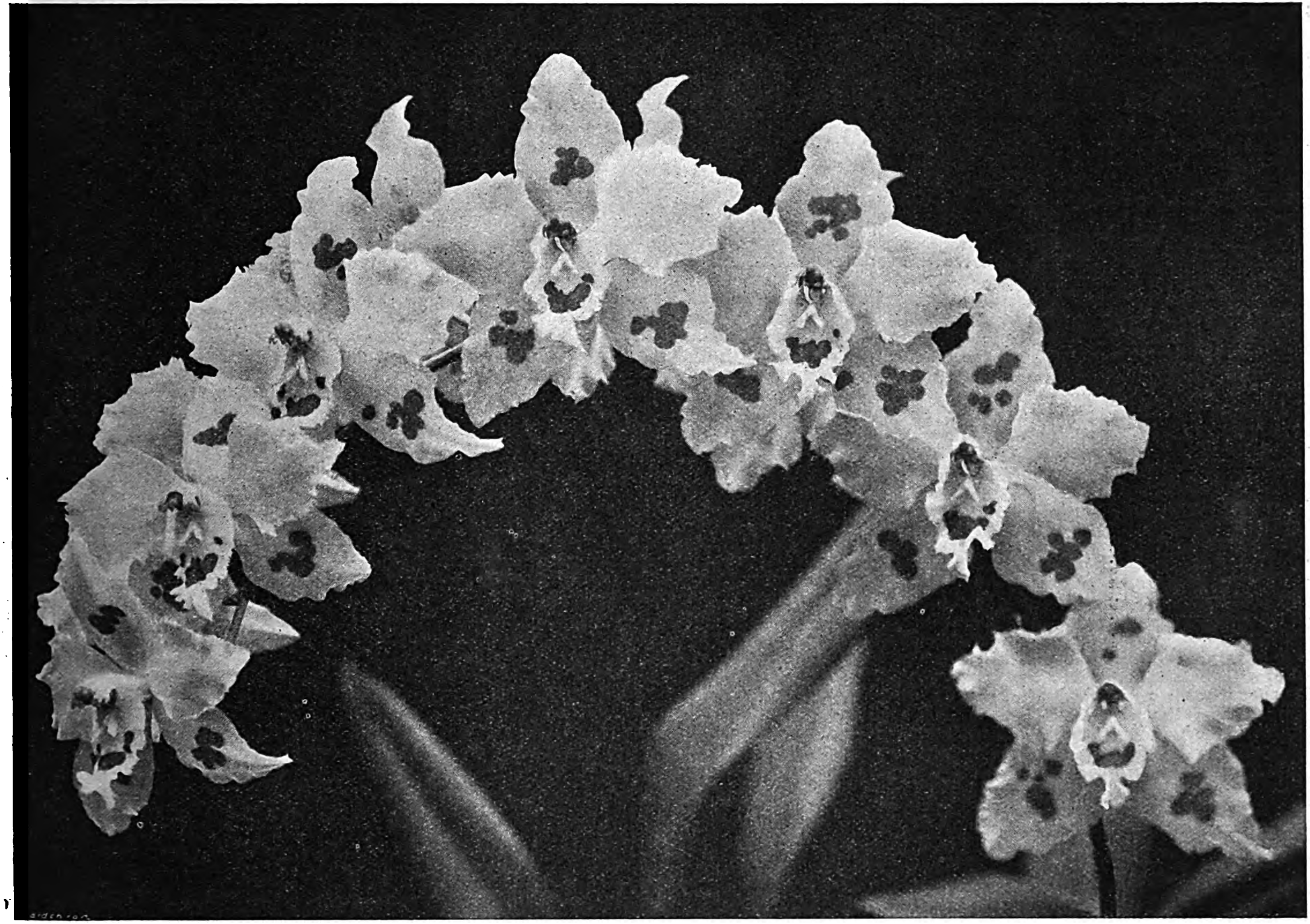

FIG. 56—ODONTOGLOSSUM MIRUM VAR. AUREUM.

R.H.S. Award of Merit, January 29. Flowers pale yellow and brown. Shown by Messrs. J. and A. McBean.

(see p. 89.)

FLORISTS' FLOWERS.

BORDER CARNATIONS.

Now that the border Carnation is definitely coming into its own again, as evidenced by the increased number of firms specialising in these flowers, many interesting points about their cultivation, and the manner and treatment in regard to setting up blooms for exhibition, are being discussed. Although there is practically little new to learn from a cultivator's point of view, as compared with what was practised by the past generation of Carnationists who made possible the wonderful varieties of to-day, the rules which govern the show-board have been materially altered and modified, chiefly because open border cultivation is more general, so that classes for such flowers and also for seedlings, are now included in all schedules; but it is only during the past half-dozen seasons or so that amateurs have been able to compete in this manner at the big London show, all exhibits having previously been grown entirely in pots, and flowered under glass.

Now, while we undoubtedly get the perfect bloom from pot culture, as it is sheltered from all adverse conditions, in setting up we are allowed wire and, although not allowed—perceptibly—we also get that bane of all Carnation lovers, the dressed flower, which all who have the best interests of the Carnation at heart are endeavouring to abolish.

This, however, presents many difficulties, for even if an authorised person were told off to disqualify any exhibitor seen dressing his or her blooms, it would not necessarily stop the evil, as the operation could be performed previously, and certainly would be by anyone who follows the practice, regardless of the fact that it is forbidden. In such case, even if it were pointed out that the blooms looked perceptibly dressed and the exhibitor denied the "use of artful aids," what then? No one could prove it, and his word must be taken, although there be ocular evidence to the contrary.

It is a most unsatisfactory state of affairs, as the exhibitor who has set up his flowers in a bona fide way—everyone being allowed to straighten petals, or remove a small, deformed or superfluous petal, which will sometimes occur in the centre of an otherwise perfect bloom—has no chance whatever against one who is an adept at dressing, and whose blooms in their true form are inferior to those from which he now wrests the prize under conditions which he knows to be wrong.

Anyone who has watched the process of dressing knows that a flower can be made so totally unlike its original shape as to be almost unbelievable, and where the advantage comes in the long run it is hard to see, and, indeed, it is obviously a drawback to growers and raisers alike, for even if a variety has good form in its true shape, it may not be the form which is admired by the amateur who sees it for the first time at a show, in its dressed fashion, which makes all the petals (so many as have been allowed to remain) lie perfectly flat; and although some lovely varieties now in commerce do grow naturally in this manner, they are the exception and not the rule, the majority having smaller petals which make a centre, or crown. Anyone purchasing a variety on its form as a dressed bloom may be quite out of conceit with it when, on flowering, it is found to be of a totally different shape, however admirable. It is not the form expected, and is very often discarded as being not true to type. It is therefore certainly to the advantage of all Carnation specialists that setting-up should be done without that pernicious use of the tweezers, which, after having almost pulled the petals out of the sheath to effect the desired end, leaves the flower an absolute wreck at the end of the day.

I am quite aware that the old florists considered dressing not only permissible, but that it added to the beauty of the flower, and many of them derided the amateur who, even then, objected to it, saying that it was his want of skill in the art that made him wish to abolish it. This, however, does not alter the fact that if a bloom has run, curled or deformed petals, which have to be removed, besides an indifferent shape which has to be adjusted to render it fit to meet the judge's eye, it is certainly not a flower which should ever have been set up as representing the form of that variety.

It is here that open border classes prove so desirable and necessary, as displaying true form without wires or other manipulation; although the blooms may not be quite so unblemished as those from under glass, even if protected to a certain extent by caps just before show time—which is allowable.

It would be much better to resort to the dressed blooms on cards—now discarded as a separate class—if it is desired to show how much more admirable is the artificial, hand-made bloom than the natural, and beautiful flower which, when well grown, cannot be improved, only altered.

As regards varieties, there have been very few Yellow-ground Fancies of outstanding merit in the past few seasons, probably due to the fact that this beautiful class greatly predominated for some time, and raisers simultaneously seemed to turn their attention to the White Grounds and Fancies proper, while some have set themselves a standard of excellence in this respect, and until that is reached all flowers are discarded, without any appeal to the show-board.

One well-known amateur raiser, whose seedlings are marvels as to colour combinations, is not satisfied because he cannot get the strength as well as the colouring in the "exotic" varieties which he favours, and, indeed, considers the only ones worth raising. From his point of view this is understandable, as the fine varieties sent out must necessarily be strong, and unique beauty does not always possess this quality, although with time and patience, he hopes to achieve his end. He has a wonderful flower which I hope to see this season, the description of the colouring being totally unlike any other, but one can only trust it will have all the other qualities which go to make a perfect border variety.

While it is the aim of every raiser to cultivate and send out only varieties which have the strong and rigid stem that would enormously add to the popularity of the border Carnation, one could not, on that account, discard all the varieties at present in commerce which decidedly do not possess this attribute, or even a strong habit of growth, for it is very doubtful, to my mind, if the Yellow-ground Fancy, in all its combinations of colouring, would ever be equal in all respects. Take the varieties in which orange and heliotrope predominate, or in which these colours are associated with apricot shades; these are never associated with strong habit, and almost invariably they belong to what is generally called the exotic class, and give their best only when grown under glass, for exhibition. The same may be stated of most Selfs in these colours: Brindle, heliotrope, and Purple Emperor being the only two consistently good with me in the border, while Dr. R. Crawford and Effie Deans, apricot, have usually given good blooms and layered well—not always a satisfactory operation in varieties ranging from orange downwards, except a clear yellow, which likes a somewhat heavier medium, in my experience.

We should all welcome a new, good yellow Self, the blooms exhibited being often restricted to one variety shown by all exhibitors, and very seldom do we see more than two, which shows how few yellow sorts sent out during the past half-dozen seasons have proved good enough to be regarded as standard varieties; this is to be deplored, as no flower is more decorative and lovely than a sulphur-coloured Self.

Now that so many amateurs grow Carnations solely in the open border, and whose number is greatly on the increase, it has been suggested that the standard of excellence necessary at present, in the border Carnation, should be modified, or that there should even be two standards of excellence, so as to include some of the varieties which, although good in regard to other points, have fimbriated petals. I fail to see what advantage this would be, for if exhibits of both smooth-edged and fimbriated varieties were shown in the same classes, it stands to reason that the former would win in every case, therefore, to benefit exhibitors with fimbriated blooms, a separate class would have to be included in the schedule—rather a remote possibility when one remembers that the glory of the border Carnation is its smooth edge, and also the aim and end of every raiser, past and present.

I am quite certain also that every amateur, as he grows in knowledge of the flower, would discard fimbriated blooms from an exhibitor's point of view, in favour of the perfectly-formed varieties; but surely it is not necessary to only have the show-board in mind when cultivating these lovely subjects. For garden decoration and cutting there are many beautiful varieties which, although, perhaps, not quite perfect in form, have stiff stems, strong habit, and are usually more floriferous than those regarded as exhibition sorts; these make large plants, if left unlayered, and these are the only points that need count where display is the first consideration. Vesuvius, the scarlet Self, is an excellent example in these respects, but I must leave any further mention of varieties for a future article. *J. B. Wells.*

EARLY-FLOWERING CHRYSANTHEMUMS.

Further trials of early-flowering Chrysanthemums were carried out in the Horticultural Department of the Cheshire School of Agriculture in 1928, under conditions typical of north-western England.

All new varieties which could be obtained were included in the trial conducted this year in the North Garden, and all were grown under similar conditions.

In every case a certain number of plants were grown disbudded, and the remainder naturally, as sprays. Beds were prepared twelve feet by four feet six inches, and the plants were set eighteen inches apart. Planting was carried out during the first week in May. During the season, notable for its dry weather conditions, all varieties made very good progress except Peerless, which failed altogether. The flowering period this year was normal.

Unusually early and severe frosts were experienced on September 30 and October 1 (10° and 13° respectively of frost being registered). All varieties were severely injured, and although some recovered and ultimately flowered well, others made very imperfect recovery. Many varieties in last year's trials are now grown in our commercial section; some have been discarded as useless, and others have been included again this year in order to determine finally their value. Raisers of new varieties desirous of participating in future trials are invited to communicate with the writer.

Observations on the varieties included in the trial are as follows:—

Afterglow.—Terra-cotta, does not disbud well; not a particularly robust grower.

A. E. Cooper.—Bright bronze, tipped with gold; one of the strongest growers in the trials; large early blooms; disbuds well. A variety with a commercial future.

Border Beauty.—Amber-buff, dark centre; grown for a second year in the trial, it again failed to respond well to disbudding. It is, however, a beautiful September variety in Cheshire, and is upright and firm in its growth. A garden flower rather than of commercial value.

Claret Gold.—A fairly strong grower, but of indefinite colour. It produces a number of blooms with open centres. Not recommended.

Chestnut.—This variety was too late this year owing to the frost. It is, however, a suitable type for bunching as sprays; rather tall.

Daffodil.—Of Goldfinder type; as its name implies, it is yellow in colour, and judging from one year's trial, will prove to be a good market variety. A very strong grower, disbuds very well.

Edna Foulkes.—A yellow, September-flowering variety; its appearance suggests a sport from September White, of which there are several already in cultivation.

Frederick Smith.—Pink, with gold points; early-flowering, of robust growth. Disbuds well, and is worthy of further trial. Probably a good commercial variety.

Godfrey's Early.—A very free-growing yellow variety with incurved petals; disbuds well; withstands wet weather particularly well and appears likely to become a great favourite.

Glow.—Bright reddish-bronze; a free-growing, sturdy variety; disbuds well and gives a fair-sized bloom. It is a variety that certainly deserves to be better known.

Hesperus.—Resembles in every respect Chestnut, with which it is probably synonymous.

Jacky.—A very pleasing pink; an excellent selling colour; disbuds well; flowers of moderate size; a good variety for spray work; it has stiff stems.

Jack Robbins.—Golden-yellow; not so early in the trial as Bronze Early Buttercup; petals slightly incurved and of good substance.

Mrs. James Scalley.—Rose-pink; a strong grower and of compact habit. An October variety in Cheshire, and cut down this year by frost. Will certainly be tried again.

Janet Wyper.—A good creamy-white variety; excellent as a spray; very long stems. To be recommended as a cut flower.

Mayford Bronze.—Bright orange-bronze; early, of good habit and disbuds well; leaves small. Certainly worthy of extended trial.

Madeline.—Pale yellow; on our soil it failed to make strong growth. An early flowering sort, but the blooms are small, on weak, spindly, brittle stems that are easily broken by wind.

Mrs. E. Cartwright.—Crushed-strawberry colour, two-and-a-half feet in height. A very useful spray variety, but not so popular on the market as expected last year. May be disbudded.

Mrs. J. Whitehouse.—Crimson, with gold reverse; incurved petals. Of Hotspur type. Grows very well in our soil and disbuds well, producing incurved flowers in September.

Periscope.—A Single, upright, yellow variety. Rather disappointing this year, as the flowers were affected by rain; three feet in height.

Peerless.—A poor type of Single, yellow, that came to us badly affected with eelworm, and failed to make any progress.

Pinkest.—Soft pink, free-growing; rather late in flowering; cut by frost before fully opening.

Pink Dame.—Very beautiful soft pink. A very early-flowering variety. Good for spray work.

Purple Robe.—A distinct shade of purple (not popular with local florists); weak in growth; two-and-a-half feet in height.

Radio.—A distinct shade of orange-yellow; strong grower and of compact habit. Disbuds well; blooms rather late in September, and was damaged by frost in these trials.

Ronnie.—Deep golden-yellow; very compact, sturdy grower, suitable for border decoration, flowering in early September; of moderate size when disbudded.

Richard Holding.—Very bright bronze-red. An early September Single that continues until cut by frost; of good habit and growth; bunches well.

Shirley Fawn.—Not a success; growth very weakly; colour too undecided for either border decoration or commercial work.

Shirley Bronze.—A weak grower, not recommended for the north. (We gave this variety a similar report last year.)

Tango.—Terra-cotta; a strong-growing variety. Disbuds well and bears a good-sized bloom; rather late and damaged by frost.

Miss B. Brookfield.—A local variety not yet in commerce. (Sent in for trial by Mr. F. Harding, of Poole, near Nantwich.) A golden-yellow Single; two-and-a-half to three feet in height; has strong, healthy foliage which is not too large and does not overcrowd. Sprays of six to ten blooms nicely placed on two-feet stems. A very good packer and "keeper."

All remarks regarding colour and growth apply equally to the requirements of the private gardener and the commercial grower. This yearly report always brings me letters of thanks, advice and help, and to those who have written, giving me helpful suggestions, I am grateful.

I must again thank the County Council Head Gardener, Mr. P. Shaw, M.M., on whom the great burden of the work in connection with these trials has fallen, for his constant care and attention, and for his continued interest. *W. E. Shewell-Cooper, C.D.H., Horticultural Superintendent, Cheshire School of Agriculture, Reaseheath.*

NOTES FROM WISLEY.

That there is much of interest to be seen in the gardens of the Royal Horticultural Society even in the winter months is amply evident to the visitor, for at the entrance itself several pleasing features are at once noticeable; in particular some seedlings of Berberis Wilsonae, which hang over the wall, and whose coral fruits, having so far escaped lightly from injuries by birds and the weather, harmonise well with the red brick-work. Flowers are also provided by Iris unguicularis which, although planted quite recently, is flowering freely against the wall of the laboratory. In addition to features of botanical interest to be seen at the entrance, a great improvement has been effected by the removal of the temporary arrangements for the signing of the visitors' book, and by the substitution of a new and permanent shelter in keeping with the style of building.

Throughout the gardens, everything is very behindhand, and little is to be seen in flower in the wild garden or the rock garden. The severity of the weathor has, however, intensified the colour of many of those subjects whose leaves are conspicuously coloured during the winter, and many good effects are to be seen. Among the most decorative are the crimson leaves of Saxifraga Beesiana. The leaves of Saxifraga Geum are also noticeable for their purple reverse, while those of Galax aphylla are conspicuous on account of their red colour. Another plant which stands out at this time of year is Polygonum affine, the dead leaves of which are persistent and remain bright brown throughout the winter. Similarly, few plants are in bloom in the alpine house, and much of the colour is provided by the Stonecrops with bright-hued foliage, such as Sedum spathulifolium var. William Pascoe, which has mauve leaves; Sedum Stahlii, with red and brown leaves; and a form of Sedum dasyphyllum, in the foliage of which delicate shades of pink, mauve and green are visible.

A few Saxifrage hybrids, mostly of the Kabschia group, are beginning to show bud, notably Saxifraga Kellereri, the early-flowering S. Burseriana tridentina, S. × Elysium, and S. × Brenda, both with rose-pink flowers. One of the few plants which, as yet, appears to be flowering with any degree of zest is the cheerful little Mediterranean Cress, Morisia hypogaea, with its bright yellow flowers and rosette of deep green leaves. A large pan in the alpine house which seems to present what one may almost term a comic appearance, contains one of the Cobweb Houseleeks which is covered with hundreds of extremely small rosettes.

A new Cistus bed is being formed in close proximity to the existing collection of Helianthemums and should afford a good means for a comparison of the different varieties and of their hardiness. The collection of Paeonies at Wisley has been replanted, and now occupies an extremely imposing area which will be interesting when the plants are in flower, and again in the autumn on account of the tinted foliage, but which seems likely to be devoid of attraction for a considerable portion of the year, unless supplementary flowers are planted with them.

In the wild garden, Hamamelis mollis is, as usual, flowering well and diffusing its pleasant fragrance, while the buds on the Azaleas are swelling and promise, with favourable weather conditions, a very good show of bloom this spring.

Among the Heaths, Erica lusitanica is now in full bloom, and many others, such as E. carnea, E. darleyensis and forms of E. mediterranea, such as Brightness, are fast coming into flower. Although any tendency towards variegation would seem out of place in the natural effect sought in a Heath garden, the golden form of the common Ling is undoubtedly a handsome plant, and particularly so at the present time, at which its golden foliage is tinged with red. A golden tinge is also perceptible in the new growth of Bruckenthalia spiculifolia and also in that of Erica arborea alpina, plants of which, although planted not so long ago, have already reached a height of about six feet.

Around the field-garden pond the bright-stemmed Willows and Dogwoods do much to relieve the wintry appearance of this part of the gardens, but they are by no means the only plants which are ornamental in this way. Certain Barberries, such as Berberis Jamesiana and B. yunnanensis, possess long, scarlet stems, while red shoots are also a feature of Coriaria myrtifolia and of the pigmy Viburnum Opulus nanum. The deep crimson, brush-like fruits of Rhus typhina are still to be seen on the pond bank, and Myrica carolinensis still retains a few of its fragrant leaves. *J. E. Grant White.*

TREES AND SHRUBS.

ESCALLONIA PTEROCLADON.

This is a shrub which seems to remain in comparative obscurity, no doubt owing to the popularity of its relatives, notably E. langleyensis, E. Donard Seedling, etc. Nevertheless, it well merits a place in the shrub border, not only for the thickly-clustered white flowers, but also for the pleasant contrast during the winter months between its reddish-brown bark and dark, evergreen leaves.

It attains a height of from six to eight feet, growing strongly erect, with no tendency to droop, as have the above-mentioned kinds; the bark on the younger branches is winged, from whence arises the specific name; in maturing, the bark peels off in strips or flakes to produce the reddish effect. The leaves, varying from one-half- to one inch in length, are oblong-oval in shape, tapering sharply towards the base, while the margin is serrate. The flowers, which appear about the end of July, droop evenly along one side of the short branchlets, which they clothe from end to end, so that although the individual blooms are small, a bush in full flower is extremely effective.

I was surprised to see a young plant of this species, which had not previously flowered, producing many sprays of blossom in November and December last, in a position which was in no way sheltered. It is a good example of the hardiness and precocity of this shrub. Propagation may be effected without difficulty by means of cuttings taken during late autumn; these may be rooted in a cold frame, and the young plants grow quickly when planted out in their permanent position.

E. pterocladon was introduced by Messrs. Veitch in 1854, through their collector, William Lobb, who sent it home from western Patagonia. It is figured in the *Bot. Mag.*, t. 4827. *B. O. M.*

VITEX AGNUS-CASTUS.

In many parts of southern and eastern Europe this curious shrub is seen very frequently, and a distinctly pleasing object it is with its masses of reddish-violet blossoms. In this country it seldom does really well, but I see no reason why it should not succeed in the south, especially as a wall plant. It is not particularly tender, but needs more sun than we generally get.

V. Agnus-castus, familiarly known as the Chaste Tree, is a deciduous shrub of ten feet or so in height, and a member of the Verbenaceae. The opposite leaves are palmate, with five to seven narrow, pointed leaflets; they are rich green, with paler, greyish undersides, and in common with all other parts of the shrub, they possess a refreshing aromatic fragrance. The flowers appear in late summer or early autumn in whorled racemes, and as these are sometimes so much as six inches long, and are borne at the leaf-axils as well as the extremities of the current season's growths, a specimen of this species in full bloom is decidedly attractive and well worth trying to attain. There is also a white variety.

This interesting shrub was introduced from the Mediterranean region so long ago as 1570. There, it generally inhabits the rocky banks of hillside streams, or sea cliffs, and in a natural state shows some variability in the colour of its flowers, which may be almost blue or nearly rose. A broad-leaved form, V. Agnus-castus var. latifolia, found in Sicily, seems to have been in cultivation years ago, but one does not hear anything of it now. It is described as having both bluish-purple and white flowers. *J.*

AKEBIA QUINATA.

This twining plant is worth the consideration of planters of climbing shrubs, for besides having bright, attractive foliage which remains evergreen in mild seasons, its somewhat quaint flowers are deliciously fragrant. This plant is monoecious, the male flowers being of a reddish-purple colour and the female blooms of a chocolate hue, and they are borne profusely on axillary racemes in early spring.

Introduced nearly a century ago from Chusan, A. quinata is not very widely grown, probably because its hardiness is questioned, but although it does not succeed in exposed positions and cold soils, it is much hardier than is usually supposed. When planted in a sheltered position in a sandy loam, with perfect drainage, it is very free-growing, and will soon cover a considerable area and hide unsightly structures with its dainty, palmately divided foliage. The slender stems are produced freely from the base and intertwine immediately on any branches or structure near. If these stems are kept apart and layered, they emit roots freely and thus form a ready means of propagation. *W. A.*

ALPINE GARDEN.

PRATIA ANGULATA.

Among the numerous low-growing subjects which are ideal for carpeting purposes, on the rock garden or in the wild garden, in cool positions, either sunny or partially shaded, is Pratia angulata, a perennial plant of natural creeping habit, from New Zealand, where it is found in the south Island at an altitude of between 2,500 feet and 4,500 feet.

It forms a close mat of prostrate growths, which root as they spread and are clothed with short-petioled, oval, ovate-oblong or orbicular, waved and coarsely-toothed, rather fleshy leaves, which are up to about half-an-inch long, rich green and glabrous above, and often tinged with purple beneath. During the summer the broad mat is studded with small, white, star-like flowers, like miniature Lobelia blooms, borne on short, erect peduncles arising from the axils of the leaves.

P. angulata is hardy in this country, and is easy to accommodate, preferring, possibly, soil inclined to be peaty, although in this respect it is not particular. When once established, it grows rapidly, soon forming a wide carpet. This species is sometimes referred to as Lobelia littoralis, and, like the Lobelia, it belongs to the Natural Order Campanulaceae. *W.*

THREE GOOD MERTENSIAS.

Having given a good many Mertensias a trial, three species have proved much more reliable than most. These are M. virginica (syn. M. pulmonarioides), M. echioides and M. primuloides. The first-named is the Virginia Cowslip, a lovely plant whose only trouble here is slugs. Its broad leaves appear early in spring, and are a cool, emerald green, lightly tinted with a sheen of bronze and blue. Soon after these, the branching, flowering stems rise to a foot or eighteen inches high and terminate in drooping flowers which, from purple buds, develop into a beautiful china-blue, pure and bright. This is a sound perennial and by no means difficult to grow in a deep, well-drained, rich vegetable loam, which does not get too dry. It seems to enjoy partial shade, and the neighbourly companions which afford this will also be useful in warding off spring frosts, from which it is liable to suffer. Once established, this fine plant should be left undisturbed. Since it is herbaceous, entirely disappearing from sight in early autumn, a permanent stake will prevent accidental loss or injury.

Quite as beautiful in its own way is M. primuloides, which comes from the Himalayas. This little three-inch plant has the close, compact habit of a Forget-me-not, to which it bears some resemblance in its oval-pointed, grey-green, hairy leaves, and the shape and size of its blooms. In summer a number of slender flowering growths rise to a few inches above the foliage and unfurl their croziers of blossom over a long period. Like those of most of the Borageworts, these flowers undergo a process of colour-changing as they mature. Commencing in a rosy-purple, they pass into a charming turquoise and azure, and finally deepen into a full-toned violet. A velvety texture affords these generous hues an added richness, which is accentuated by an orange eye. If the effect of a plant in full bloom is somewhat dappled, there is no doubt as to the harmony of the colour blending, and its striking, unusual beauty. Moraine treatment is recommended by many for this choice species, but it will do well in a mixture of sandy peat and gritty loam, with ample depth to ensure uniform moisture. In some rock gardens it thrives surprisingly in the ordinary conditions accorded to alpines in general, and I should not like to be too emphatic as to its requirements. Given sufficient moisture in summer it will enjoy full sun, otherwise some mid-day shade is desirable. Propagation is effected by division or cuttings. One or two very distinct and handsome forms of M. primuloides have been discovered within recent times, but I have not yet seen them in any of the lists.

The other species, M. echioides, is also a Himalayan, and it is easier to grow, in my experience, than the preceding. It makes a similarly low, tufty mat of pale green, downy leaves. In the later summer, branching flower-stems rise above these to a height of about eight inches, and for many weeks maintain a succession of flowers of an intense sapphire-blue. Any good vegetable soil that is cool and moist and well-drained will suit this delightful species, and in such a medium it may have full sun. To increase M. echioides, the means suggested for the preceding may be employed. With both of these, as with the American species, slugs and soil pests must be guarded against. *A. T. J.*

THE GENUS PRIMULA.

(Continued from p. 86).

KAUFMANNIANA (Regel.). Kaufmann's P.
(Cortusoides.)

A downy, perennial species with a tuft of rounded, blunt leaves one to two inches across, deeply or shallowly heart-shaped at the base, borne on slender, downy, or more or less smooth stalks two to three inches long; margins divided into numerous oval, sparsely-toothed lobes. Flower stem six to eight inches tall, moderately downy below, smooth upwards, bearing a many-flowered umbel of rosy-violet blossoms. Corolla about three-quarters-of-an-inch across, with broadly heart-shaped, notched lobes; tube cylindrical, about three-quarters-of-an-inch long. Introduced in 1883.

Grows in shady places on the Alexander Mountains in Turkestan, central Asia, at an elevation of 3,000 to 9,000 feet above sea-level.

Culture: Provide it with good loam, leaf-soil and sand, in a cool, shady spot, and protection from damp in winter.

KHASIANA (Balf. f.). Khasia Hills P.
(Candelabra.)

This Indian Primula, which is closely allied to P. prolifera (Wall.), produces several rosettes from the same root-stock, of smooth, non-mealy, lance-shaped, pointed leaves about nine inches long and one-and-a-half inch wide, gradually tapering to an obscure stalk dilated and sheathing at the base; margins slightly toothed; both surfaces covered with pitted glands. Flower stem stout, twelve to eighteen inches tall, bearing one or two umbels of numerous purple flowers. Corolla about three-quarters-of-an-inch across, with egg-shaped, broadly bilobed segments; tube somewhat inflated, constricted at the mouth where there is a ten-lobed ring.

This species is found in the Khasia Hills, in north-eastern India.

Culture: As for P. imperialis.

KIALENSIS (Franch.). Kia P.
(Farinosae.).

A dwarf species, with a tuft or rosette of leaves with egg-shaped or oblong-egg-shaped, blunt blades tapering to a short stalk, in all from three-quarters- to one-and-a-quarter inch long; upper surface more or less smooth, underside coated with yellow meal. Flower stem smooth, one inch to two inches tall, bearing an umbel of two to six blossoms on stalks a quarter- to three-quarters-of-an-inch long. Corolla about three-quarters-of-an-inch across, widely cup-shaped; lobes broadly egg-shaped, bifid; tube about half-an-inch long. The colour of the blossoms of this species has not been recorded.

Grows on the mountains of Kia-Kdzan, near Tatsienlu, in Szechuan, western China.

Culture: Good friable loam and grit, in a damp, open spot, should suit it.

KINGII (Watt.). King's P.
(Amethystina.)

A smooth, non-mealy, tufted perennial species with numerous, somewhat thick, elliptic-lance-shaped, pointed leaves two to three inches long, broad and sheathing at the base; margins quite entire or furnished with obscure, blunt, rounded teeth. Flower stem six to ten inches tall, slender, bearing an umbel of four to six reddish-purple or claret-coloured blossoms half-an-inch to three-quarters-of-an-inch across. Corolla broadly funnel-shaped, divided into five oval, retuse, scarcely notched lobes; tube cylindrical below, dilated upwards, longer than the calyx, smooth inside, downy without.

Grows in damp spots near Na-tong, in the Chumbi Valley, Sikkim Himalayas, at about 15,000 feet above sea-level.

Culture; Grow it in good loam and grit, in a well-drained, open spot, with plenty of underground moisture when the plant is in growth, and a pane of glass overhead in winter.

KISOANA (Mig.) Kiso P.
(Cortusoides-Geranioides.)

A tufted, perennial species with the whole of its foliage and stems more or less clothed with silky down. Leaves rounded, heart-shaped, about two-and-a-half inches long and the same across, borne on hairy stalks; margins furnished with rounded teeth or lobes. Flower stem four to six inches tall, bearing from two to five deep rose-coloured blossoms on stalks about three-quarters-of-an-inch long. Corolla about three-quarters-of-an-inch across, divided into five broadly heart-shaped, notched lobes; tube cylindrical below, dilated upwards, twice as long as the calyx. Illustrated in *Notes from the Royal Botanic Garden, Edinburgh*, 1913.

Grows in cool, shady places in the alpine regions of Kiso, south-western Japan.

Culture: As for P. cortusoides.

KITAIBELIANA (Schott.). Kitaibel's P.
(Auricula-Rhopsidium.)

This dwarf, perennial species is somewhat rare in cultivation. It has a tuft or rosette of elliptic or oblong lance-shaped, pointed or blunt leaves narrowing gradually to a winged stalk, in all one inch to three inches long; margins entire, furnished with recurved teeth towards the tip; both surfaces rather glaucous and dotted with viscid, glandular pits. Flower stem two to three inches tall, glandular, bearing one or two rosy-mauve or lilac, white-throated blossoms, which rarely rise above the foliage. Corolla flat, three-quarters-of-an-inch to one inch across, divided into five broadly heart-shaped, notched lobes; tube cylindrical, about three-eighths-of-an-inch long.

Grows in clefts in rocks and stony places in moist, somewhat shady spots, in the Alps of Servia, Croatia, Bosnia and Hezegovina.

Culture: Grow it in good fibrous, calcareous loam in a damp spot in half-shade, or plant in a cleft in a limestone rock packed with the above compost.

KIUCHIANGENSIS (Balf. f.). Kiuchiang P. (Nivales).

A handsome microform or sub-species of P. calliantha, with a tuft of oval or oblong leaves, one-and-a-half inch to two-and-a-half inches long, blunt or rounded at the tip, gradually tapering to a scarcely distinct, broadly winged stalk; margins furnished with regular, rounded teeth; underside coated with meal. Flower stem three to four inches tall, bearing an umbel of about half-a-dozen pale purplish-blue blossoms on stalks about a quarter-of-an-inch long. Corolla about one inch long, with broadly heart-shaped lobes; tube much longer than the calyx. Flowers in June and July. Illustrated in *Jour. Roy. Hort. Soc.*, Vol. XXXIX, 1913. In cultivation in 1913.

Grows in damp, alpine pastures near Tsarong, on the Salween-Kiuchiang divide, in south-eastern Tibet.

Culture: As for P. calliantha.

KLAVERIANA (Forrest). Klaver's P. (Petiolaris-Davidii).

A beautiful perennial species with a thick, woody rootstock clothed with oblong, deciduous scales about half-an-inch long. The oblong or oblong-egg-shaped, somewhat membranous leaves have rounded or blunt tips and are nearly stalkless, or taper at the base into a wedge-shaped stalk, in all from six to seven inches long; margins furnished with regular, rounded teeth; upper surface brownish-green and covered with minute, meal producing, glandular hairs, underside paler. Flower stem six to nine inches tall, downy, bearing from two to three blue flowers on somewhat stout, downy stalks about half-an-inch long. Corolla about one inch across, smooth, with egg-shaped, entire lobes; tube cylindrical below, slightly dilated upwards, white at the base, half-an-inch long. Flowers in March and April.

Grows in damp, shady places, such as the margins of thickets, shady banks of streams and moist, rocky places in ravines, in north-eastern Upper Burma and south-eastern Yunnan, at 8,000 to 11,000 feet above sea-level.

Culture: Good friable loam and Oak or Beech leaf-soil, in a cool, damp, shady spot, with protection from damp in winter, should suit it. *A. W. Darnell.*

(*To be continued*).

PLANT PESTS IN EAST SUSSEX DURING 1928.

With us, the year 1928 does not stand out conspicuously as a bad pest year; with but few exceptions, extensive damage has been rare. The principal exceptions were aphides on fruit trees and the Currant capsid, Lygus pabulinus, doing damage to several kinds of small fruits. Observations on some of the pests noted are appended.

Coleoptera.—Apple-blossom weevil (Anthonomus pomorum, L.), was seen in several places, but little damage was done. The clay-coloured weevil (Otiorrhynchus picipes, Fab.) was common, and damage to growing nursery stock by the adult weevils was considerable. This pest is always a serious one and control measures are extremely difficult. Grease bands fail to trap the creatures, and poison wash or bait fails to account for many. It appears that the only method of keeping these weevils under control is to put down traps and collect them by hand. Loose hay-bands placed near the feeding positions are the most successful traps used by the writer, but such methods are slow, and one would like to employ some quicker method. The black vine weevil (O. sulcatus, Fab.) caused a good deal of damage in the larval stage to the roots of pot plants; this pest is also difficult to control, and a method that is both economical and practical is urgently needed. Trapping the adults gives fair results, but this does not help when the grubs are actually at the roots of the plants. If we had an insecticide with which to soak infested soil, to kill the pest and leave the plants uninjured, it would be a step in the right direction. Raspberry beetle (Byturus tomentosus, Fab.) was present in most gardens, but the damage was, perhaps, less than normal. Turnip flea beetles (Phyllotreta nemorum, L.) and other species were not a serious pest in the spring, but seemed to increase in numbers later in the year. This increase was probably due to the long, dry spell which was experienced in this district. Pea and Bean weevil (Sitones lineatus, L.) gave much trouble to market gardeners around the seaside towns. The pest appeared early; the spring was cold and the growth of Peas and Beans was slow, hence the weevil was able to do its maximum amount of injury. Control measures with this pest are very unsatisfactory, and it appears that at present we must rely upon cultivation and its effect upon the host plant to enable us to fight this pest. Nearly one hundred years ago, horticultural writers advocated the dusting of Peas and Beans with soot and lime as a remedy against weevil, and the advice is repeated parrot-like when Sitones is under discussion, even down to 1929, but if those who so write actually made a few observations for themselves instead of relying upon others, the remedy would not be advertised so freely. The soot and lime are not applied to kill the creatures, but to render the food plant unpalatable. The writer has coated Pea and Bean foliage with soot, lime and fine, dry garden soil, and fed the treated foliage to Sitones in large glass cylinders, but has not succeeded in starving the creatures; they eat treated foliage if nothing else is available. Much better results in the garden may be obtained by keeping the soil with a fine tilth, so that there are no lumps to shelter the weevils when not feeding, and by keeping the host plants growing fast. Sitones, of course, does not confine its attacks to Peas and Beans; almost every Clover plant in the country is attacked more or less, and this fact alone renders control measures difficult.

Hemiptera.—Aphis attacks on all cultivated fruits were above the average, except on trees winter-sprayed with good tar distillates, and one wonders how long it will be before gardeners in general will realise that tar distillate washes form the most effective means of controlling aphides, and that crippled foliage on any fruit tree only reflects bad management. Tar distillates are expensive, but, if applied well, they do their job. The Apple capsid (Plesiocoris rugicollis, Fall.) was not seen by the writer in any part of the county, but its ally, the Currant capsid (Lygus pabulinus, L.), was only too apparent. Black, Red and White Currants, together with Gooseberries, were attacked in most gardens; the effect of this attack on the crop of 1929 will require some attention. The capsid attacks the foliage of the selected host and because the fruits are not damaged, growers take little or no notice of the pest. To allow the Currant capsid to go on increasing at its present rate would seem to be dangerous, because it cripples so much of the leaf-surface and deforms the young growths to such an extent that future crops are bound to be affected, although it may take more than a year to do so. The control of the Currant capsid is difficult because it feeds on such a wide range of host plants. Nicotine applied in spring seems to be the generally accepted control, but the pest drops to the ground so soon as the spray fluid is applied to the bush, and it is necessary to spray the ground as well as the tree to effect any measure of control; this makes the cost of spraying rather high. Professor Theobald has obtained fair control over the Apple capsid, under west Sussex conditions, by using tar distillates in winter, but reports that no control was obtained over the Currant capsid by this means. Carrot aphis (A. carrotae, Koch.) was common in all districts, but no outstanding damage was noticed. The grey Cabbage aphis (A. brassicae, L.) was present throughout the season, and some damage was noticed, especially on Savoys.

Lepidoptera.—The various winter moths did not cause any serious damage, and tortrix larvae were not abundant on cultivated fruits. Raspberry stem bud moth (Lampronia rubiella, Bjerk.) was noticed in a few gardens when in the larval stage, but little damage was done. The larvae of the gold-tail moth (Porthesia similis), was very common on Hawthorn hedges, but was not seen on cultivated fruits. Many larvae were collected, and most of them were found to be attacked by a Braconid, which is probably their natural control. Codling moth (Cydia pomonella, L.), was, as usual, very local, and in the main little damage was noticed. Cabbages and Brassicas generally suffered much damage from Cabbage white butterflies and Cabbage moth, and some damage was noticed by the garden pebble moth (Pionea forficalis, L.). The pebble moth larvae are very common and a lot of the damage done by this pest is normally put down to the Cabbage white butterflies. Cutworms (Agrotis spp.) have been present in large numbers, and much damage was done to market garden crops; the scattering of bran, poisoned with Paris green, was employed with some success, but not until much of the damage had already been done. The diamond-backed moth (Plutella maculipennis, Curt.) did extensive damage in all districts.

Diptera.—Carrot fly (Psila rosae, Fab.) was common in all the smaller gardens, but the damage was not serious where Carrots were grown on a larger scale. Onion fly (Hylemyia antiqua, Meig.) and Cabbage root fly (Chortophila Brassicae, Bouche.) were present in all districts, but the damage was less than average, which was strange considering the dry period experienced. Celery fly (Acidia heraclei, L.) caused much damage, especially the last brood. The incidence of Diptera attack seems to require a lot of explanation. It is easy to say that flies are not so prevalent during a wet year compared with a dry year. The writer's experience in Yorkshire in 1927 was that few fly pests could be recorded because of the wet season, but last year in the south, after a very dry season, it was the same story. Perhaps it is just as well not to enquire into the incidence, rather let us be pleased that the flies did not do much damage.

Hymenoptera.—Gooseberry sawfly (Nematus ribesii, Scop.) was common in most gardens; where insecticides were used early in the season, the pest was controlled easily, but where neglected, much defoliation resulted. Pear sawfly (Eriocampa limacina, Cameron) was seen in a few gardens but chiefly on wall Pears. Apple sawfly (Hoplocampa tesudinea, Klug.) was common everywhere and caused many Apples to drop; the damage was, perhaps, more apparent than real, because most of the Apple trees which set any fruits at all were overloaded with small fruits, so that some thinning was desirable, and the sawfly probably did good.

Nematoda.—The presence of the Potato race of Beet eelworm (Hetrodera Schachtii, Schmidt.) was discovered in one allotment garden. This pest is rarely found in gardens where a good rotation is practised, but is liable to be troublesome in places, such as an allotment, where good rotations are not so easy.

Collembola.—Springtails caused some damage to cultivated Mushrooms in one district; they were present in huge numbers. The writer was present in one yard early in the summer and a strong wind was blowing, the springtails being blown out of the straw covering the Mushroom beds and collected under the wall; in this position they could be taken up by the shovel-full! *G. C. Johnson.*

WHITE TIP DISEASE OF LEEKS.

A disease of Leeks, at present called white tip, was found in the Midlothian districts near Edinburgh, in the autumn of 1928. It was at first accepted as the downy mildew of Leeks, caused by Peronospora Schleideni, although the symptoms, described below, were not of the usual type. In England, Dr. Pethybridge has noted on several occasions the white tip symptoms, and other observers have noted similar appearances. In the present instance, a species of Phytophthora has been found to be responsible for the disease. It is not supposed that the disease is new, but that it has not been recognised as a disease separate from that caused by the downy mildew fungus. Neither is it supposed to be confined to the districts already examined, since, as already stated, a similar appearance has been seen in England. When attention has been drawn to the fact that this is not the Peronospora disease, it will probably be found to be fairly generally distributed.

The growers around Edinburgh have noted white tip for some time, but have treated it as for downy mildew. It appears to be of some considerable economic importance, as several fields have been examined where hardly a single plant has escaped infection. Some resisted the attack more or less successfully, but the majority succumbed badly. The yield and market value was thereby greatly reduced.

The symptoms are as follow:—The tips of the leaves die back for a distance of one to four inches, and this area then becomes white. Most tips so affected become limp, while others become stiff and crisp. Some leaves are attacked at the margins, some distance from the tip, and again the area becomes white. Leaves affected in the latter manner become twisted in consequence. Later, water-logged areas develop towards the middle or base of the leaf. In these areas the fungus can be found. (See Fig. 57). The plants attacked rot away if they are large and mature, but remain stunted if young. Fields attacked can be recognised some distance away, as the purplish-green colour of healthy crops is replaced by a much lighter green colour.

The fungus responsible was discovered when leaves supposed to be attacked by Peronospora Schleideni were examined. It was noticed that the oospores taken to be those of the above fungus were fertilised in an amphigynous manner. So far as is known, Peronospora has only the paragynous method of fertilisation, and this fact immediately suggested that the fungus was a Phytophthora. Further examination showed a few paragynous antheridia and sporangia. The measurements of the fungus are as follows:—Oogonia: a range of 27 to 39 microns; oospores: a mean of 27 and a range of 20 to 31 microns; sporangia: very variable, ranging 37-75×31-48 microns (a mean of 58 ×42 microns). This fungus is proving difficult to obtain in culture, but work of this nature is proceeding. Until the fungus is obtained in pure culture, the exact diagnosis and life-history cannot be known.

Dr. Ashby, of the Imperial Bureau of Mycology, one of the best authorities on the Phytophthoras, very kindly examined the fungus and definitely diagnosed it as a Phytophthora, for which very grateful thanks are recorded. *C. E. Foister, Department of Agriculture's Plant Pathological Laboratory, Royal Botanic Garden, Edinburgh.*

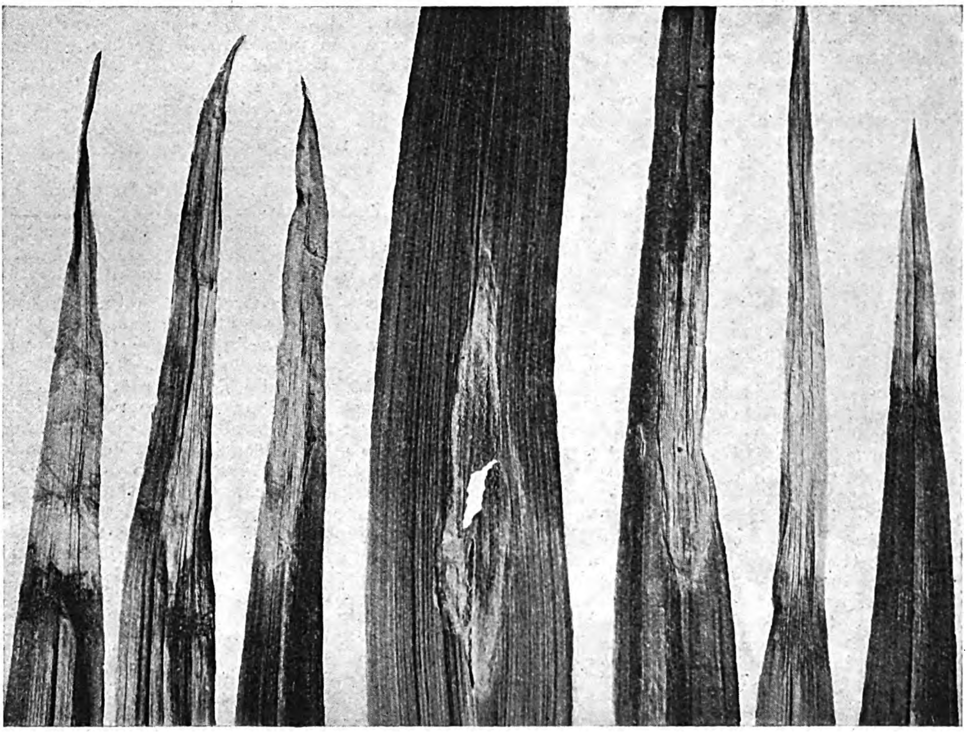

FIG. 57.—WHITE TIP DISEASE OF LEEKS.

THE BULB MITE.

For very many years the bulb mite, Rhyzoglyphus echinopus, has been known as an unwelcome creature to horticulturists throughout the greater part of the world. It was in this country originally known as the Eucharis mite, owing to its predeliction for that plant, and has since been recorded on a vast number of cultivated plants of widely diverse types.

It has been a matter of keen controversy as to whether this mite can attack healthy plants, or is merely a scavenger and follower of decay originally caused by some other organism.

The writer has studied the mite for a number of years, with a view to determining its real economic significance, more particularly with reference to its occurrence on Narcissi, but also on Tulip, Onion, Iris and other bulbs. As a result of this study, there is no doubt that, while, for a number of reasons, the mite is a most undesirable creature, it is nevertheless unable, by itself, to damage the above-named plants, unless they have become unhealthy, for some other reason. A brief survey of the life-history of the mite will be followed by a discussion as to methods of reducing its numbers.

The mite is a small sluggish animal, yellowish-white to pinkish in colour, and has a highly polished, translucent appearance. When fully grown, it is slightly smaller than a pin's head. The nymphs, or young mites, are very similar in appearance to the adults, only smaller, with the exception of the stage known as the hypopus. This latter is a highly specialised nymph of which more will be written later. It is small, shining and of a brownish colour, and is considerably harder than is the more usual form.

The mites occur in colonies of considerable size on suitable breeding grounds, such as beneath the outer scales, and around the basal plates, of Narcissus and Hyacinth bulbs. The female mites lay eggs freely and, in the positions previously mentioned, large colonies rapidly spring into being during the warmer months of the year. At all seasons, small numbers of the hypopal nymphs, referred to above, may be found in the colonies, but during the summer months enormous numbers of them occur. They are in reality the travelling stage of the mite. They do not feed, but wander about, in and around the colonies, until an insect, for example, a bulb fly, settles within reach. Then numbers of them seize hold of the insect and cling tightly to it. Owing to their small size, the insect hardly notices them and carries them around for some time. Eventually the hypopi drop off and, if alighting at a spot where suitable food is present, soon transform to normal mite nymphs and commence to feed and, in a very short space of time, a vigorous colony springs up.

As mentioned at the beginning of the article, it has long been debated as to whether or no the mites can damage healthy plant tissue. While there is no need to detail the experiments, which show clearly that they are unable to do so, a resumé of the results obtained is of interest. Under normal conditions of cultivation and storage, the mites cannot damage healthy Narcissus, Tulip or Onion bulbs. In fact, Narcissus bulbs kept out of the soil for thirteen months, and all the time covered with mites, were, at the end of that period, entirely undamaged.

As opposed to this, bulbs damaged by mechanical means, such as by being cut at the time of lifting, were frequently entirely destroyed by mites later. Similarly damaged bulbs, kept free from mites, eventually recovered. Bulbs attacked by bulb eelworm or bulb fly were destroyed more quickly when mites were also present on them than they were by the other pests working alone.

The results obtained with bulbs first subjected to the hot-water-treatment were of particular interest. Healthy bulbs so treated were in no case subsequently damaged by mites. Nor were bulbs which had previously been lightly infested with bulb eelworm. But, bulbs originally heavily attacked by eelworm or damaged by bulb fly larvae were often entirely destroyed by mites after treating. Similar bulbs kept free from mites eventually made a complete recovery.

A further point must be borne in mind. Narcissus and other bulbs are prone to a number of fungus diseases. Bulb mites are ubiquitous and wander freely from bulb to bulb while these are in store and are, in addition, carried among the bulbs during the growing season by bulb flies. The mites have numerous, long hairs on their bodies, and are thus able to carry spores of injurious fungi from one bulb to another in the course of their wanderings.

It is clear from the above that, while the mites are unable themselves directly to destroy healthy bulbs, they are, nevertheless, indirectly responsible for considerable losses. The desirability of reducing their numbers is therefore plainly indicated.

Before proceeding to a discussion of the control measures which may with success be adopted against the mites, mention may be made of a natural enemy, which serves in some measure to check their activities.

This natural enemy is another mite, a species of the genus Hypoaspis. It is an active, quick-moving creature, which wanders about over the colonies of bulb mites, on which it is predatory. At frequent intervals it seizes a bulb mite, which it carries about while sucking out the contents of the body, and finally discards. Half-grown larvae and nymphs are the stages of the mite most frequently attacked, for the adults are rather large to carry, and the hypopal stage too hard to pierce. Large numbers of these predators are often found in the colonies of bulb mites, and as they are very voracious, they undoubtedly dispose of large numbers. They are therefore of considerable value as a check on their activities.

CONTROL MEASURES.

Careful attention to the following points will do much towards maintaining a check on the activities of the mites, with a consequent reduction in the amount of damage attributable to them :—

(1) LIFTING.—Bulbs should invariably be lifted with care. Badly cut bulbs provide suitable breeding-grounds for the mites, and will, in all probability, not recover from the attack. Such bulbs should be discarded and destroyed.

(2) DESTRUCTION OF ROTTED BULBS.—Every cut or rotted portion of bulb will harbour mites, if left in the ground ; "hot-water-treated" bulbs, if planted over such material, will be liable to mass infection by mites. This may result in extensive losses and, therefore, all damaged bulbs should be collected and destroyed.

(3) STORAGE.—Bulbs should be stored under hygienic conditions and looked over periodically. Fungus storage rots may easily be spread by wandering mites, so, all soft bulbs should be picked out and destroyed.

(4) HOT-WATER TREATMENT OF BULBS.—The hot-water treatment, for the control of bulb eelworm and bulb fly larvae is well-known, and descriptions of the process are easily obtainable. The treatment also kills mites. Care must be taken that the bulbs are not subjected to re-infection by mites until they have had good time in which to recover from their previous injuries.

(5) EARLY TREATMENT OF EELWORM INFESTED BULBS.—The early diagnosis and treatment of eelworm-infested bulbs is essential in order to avoid serious subsequent losses from mite attack.

(6) FUMIGATION.—It is possible successfully to fumigate small quantities of bulbs in order to free them from mites. Paradichlorbenzene is the substance employed for this purpose, and full details as to the process will be given to any person wishing to use the method, which is cheap and effective. *W. E. H. Hodson, Seale-Hayne Agricultural College, Newton Abbot.*

HOME CORRESPONDENCE.

Cordon Pears.—I read with much interest *A. P.'s* article in your issue for January 26, p. 68. I have made a special study of Pears grown on the cordon system in the same garden for the past twenty years, and I am still at a loss to account for their strange behaviour with regard to flavour. I am convinced that weather conditions alone do not account for it. I have found the following sorts to be most consistent, and give them in order of ripening :—Beacon, Jargonelle, Louise Bonne of Jersey, Conference, Jersey Gratioli, Doyenné du Comice and Beurré d'Avalon, otherwise known as the Glastonbury Pear. I consider the last-named to be the best October Pear in cultivation ; it is better than Doyenné du Comice, but does not appear to be well known, except in the neighbourhood of Glastonbury. Few nurserymen catalogue Beurré d'Avalon, and I had some difficulty, some years ago, in procuring a dozen cordon trees of it. The fruits have a russet skin, dark red on the sunny side, and I advise all those who have not given this excellent Pear a trial to do so. Jersey Gratioli is a good September Pear, its fruits being of medium size and always well flavoured. The same remarks apply to Louise Bonne of Jersey, which has fruits of inferior appearance but very richly flavoured. I have been obliged to discard many of the leading varieties of Pears on account of their lack of flavour as grown here. I have, at times, come across excellent fruits of Clapp's Favourite, Gansel's Bergamot, Thompson's and Marie Louise, in Somerset and Derbyshire, but these sorts are quite useless here. Passe Colmar has quite a distinct flavour, suggestive of Almonds ; this flavour is quite pleasant at times, but is often so pronounced that the fruits are rendered uneatable. Like *A. P.*, I find the behaviour of Pears a most interesting subject ; their capriciousness gives a zest to their cultivation. *R. Carter, Miskin Manor.*

Number of Florets in an Exhibition Chrysanthemum.—I have often wondered how many florets—often called petals—constitute one of the modern full-sized exhibition Japanese Chrysanthemums. Therefore, to satisfy my curiosity, I set myself the task of dissecting a specimen of Louisa Pockett, measuring eleven inches in diameter. I laid the florets in heaps of one hundred, and when the operation was completed, I had before me the grand total of 975. The bloom was far past its best when I set myself the task of counting, therefore there were probably more florets when the flower was in perfect condition. I do not remember having seen in print, or hearing of, the totality of florets in a gigantic Chrysanthemum. *A. W. Warner, Gardener to the Countess of Hardwicke, Hamble Cliff, Netley.*

Partial Soil Sterilisation.—As one who, for the past five years, has been interested in soil sterilisation, using the baking method, my experience is that the baking process leaves much to be desired. My reasons for stating this are (1) cost of fuel ; (2) the amount of wasted heat outside the walls ; (3) length of time necessary to bring it to the required temperature ; and (4) the gases or fumes given off by the baking of the bottom six inches of soil permeate the whole, thereby destroying the beneficent bacteria or rendering them inactive for some time to come. This is most noticeable after potting Chrysanthemums in freshly sterilised soil. My experience, so far as our special soil is concerned is, that it is much better to wait a day or two, rather than to sow seeds in warm soil which is liable to cake after being pressed down lightly. Those who are fortunate in having plenty of shed room cannot do better than to start sterilising their soil two or three weeks prior to its use. No doubt the baking process is the most convenient in small gardens for the raising of seedlings, but where large quantities of soil have to be dealt with, some process similar to Mr. Falconer's (Vol. LXXXIV, p. 494) is the cheapest and simplest. *G. W. M., Dunham Massey.*

——As a gardener, I have been greatly interested by the letters in your pages on soil sterilisation, and now that the professionals have had their authoritative say in the matter, may I, an amateur, call attention to a few elementary points which there seems a danger of forgetting in all this discussion about ways and means ? The first thing to consider is the effect of sterilisation on the population of the soil, for it is upon numerous bacteria and possibly fungi that the soil's productivity depends. Completely annihilate these, and we render the compost unfit for any of the higher plants. To be beneficial, sterilisation must be only partial. Fortunately, however, our methods of sterilisation, while killing off weed-seeds and insects, indirectly benefit the soil-flora by killing protozoa as well. These organisms, which feed upon bacteria, are more susceptible than their prey, and cannot recover so quickly from such a severe check as that administered by volatile chemicals, baking or steaming. As protozoa increase, bacteria decrease—and the converse holds. As a result of partial sterilisation, the bacteria eventually become more numerous than they previously were, "fix" more nitrogen, and in other ways increase the soil's fertility. Both they and their enemies suffer greatly from sterilisation, of course ; the beneficial effect arises from the greater resistance and fecundity of the bacteria. This being so, the most useful method is that which affects least adversely the physical proporties of the soil, and which at the same time is most convenient and cheap in practice. Gardening only in a small way, I have never tried disinfectants ; as for the other two ways—steaming and baking—I find the latter much easier and quite as satisfactory as the former, and thus agree with Mr. Shewell-Cooper, whose leaflet, however, I have not yet perused. *W. T. S., Cambridge.*

Gardening Careers.—Your correspondent, *B. C.*, on p. 51, asks an important question concerning young men's prospects in the gardening profession. Having served for over fifty years in private and public gardens, I venture a suggestion which may be useful to him and other young men who may be contemplating a gardening career. Owing to the post war conditions, there is undoubtedly a depression in many private gardens at the present time. Notwithstanding this depression, there are still good prospects for enterprising young men in another sphere of gardening, namely, public service, where there is an increasing demand for gardeners as park officials, with a higher rate of remuneration than is usually given in private gardens. Hence, there is, in this field, a good opportunity for ambitious young men. Of course, they could not expect to obtain good positions without qualifying for them. *W. B. G.*

Pyracantha Rogersiana.—One has to think occasionally to remember the spelling of this name (see Vol. LXXXIV, p. 510, and p. 67). The introduction of new trees, shrubs and other plants proceeds at a greater pace than the books which record them in this country. I have now an American book which records the above shrub under the name of Pyracantha crenulata var. Rogersiana. A few weeks ago I had a scrap sent me to name, and had to rely upon memory, and called it Pyracantha Rogersiana var. flava, being the yellow-berried one, for which I have a great liking because of its distinctness from the general run of the species and varieties of Pyracantha, except some forms of P. angustifolia, which have pale fruits that are practically yellow. The intimation by Mr. Charles Coltman-Rogers that it makes "the best of garden hedges" should be welcome news to many, as it should succeed better than Lonicera nitida in town gardens, where I learn it sometimes loses its leaves ; and come in line with Berberis Darwinii. I have seen all sorts of plants used for the making of hedges, from Ligustrum vulgare (Common Privet) to Populus canescens, which grows very thinly. *F.*

Salix lanata.—On p. 60, *J.* states he has not been able to distinguish between Salix lanata and the variety Stewartii. In April, 1926, I had flowering specimens sent me from the gardens of the Royal Horticultural Society, Wisley, asking for a distinction. The specimens were labelled S. lanata var. Stuartii, and it would be well if the spelling were authenticated, as I have not yet seen it in any book. The specimens had the usual densely silky catkins, but the hairs were at first white, changing to grey as the catkins become more nearly full size. The year-old twigs were greenish, now they are dull dark brown. My specimens, collected in Mid Perth in 1906 and 1907, had pale canary-yellow hairs on the catkins, and that colour has been largely retained after twenty-one years. The twigs were brownish-yellow and more or less polished, the two-year-old twigs particularly so. The leaves are orbicular and rounded or subcordate at the base. The variety Stuartii has smaller, broadly oval leaves, narrowed to the base. The actual shape of the leaves, I think depends a good deal on the age or vigour of the bush, as I have obovate leaves from a small bush in the same colony. The plants at Wisley are too young to judge about the size the leaves may attain. Meantime, the leaves and catkins look distinct. *J. Fraser.*

Embothrium coccineum in Sussex.—This shrub, hardy in the south of England, is often known as the Fire Tree, which name well describes it, for when in flower it is a gorgeous mass of red, due to its numerous tubular blossoms.

E. coccineum has, I believe, a future before it, the only drawback being that it cannot be grown in the open garden in many parts of this country, as these are too cold for this Chilian shrub's happiness. The specimen with which I am acquainted, in a Sussex garden, is growing in a position which is protected from all winds, but at the same time, a moderate amount of sunshine can reach it. The shrub has flourished and attained a height of twenty-five feet, and promises to become a very striking and characteristic specimen. *W. Moseley.*

Cotoneaster Simonsii as a Hedge Plant.—A writer in the *Quarterly Journal of Forestry* for October, 1928, comments on the use of Cotoneaster Simonsii as a hedge plant in the neighbourhood of Inverness and other parts of Scotland. In such places as, for example, in the nursery of Messrs. Benjamin Reid and Co., of Aberdeen, it makes a hedge four to five feet high and fifteen to eighteen inches through, well furnished down to the ground. An evergreen—sturdy, clipping well and easy of propagation—this Cotoneaster deserves to have its name added to the none-too-long list of useful hedge plants. *K.*

VEGETABLE GARDEN.

PARSNIPS.

The Parsnip (Pastinaca sativa) cannot be stated to rank among our most popular vegetables, and its peculiar flavour does not appeal to every palate, nevertheless, it is a very useful winter vegetable which is in season throughout the winter months, and, if careful attention is paid to the cooking of the roots, they make a palatable and nourishing dish when other vegetables are less plentiful.

The Parsnip is one of the easiest vegetables to grow, and few roots give such a high return for the care bestowed upon them, for under favourable conditions the yield is enormous. It is not fastidious as regards soil, but a sandy loam, which enables the root to penetrate a considerable depth in the early stages of growth, is productive of the best results. While the use of fresh manure is not advisable in the preparation of the Parsnip bed, a moderately rich soil is essential for the production of good roots, for those which become stunted under starved conditions are lacking in both texture and flavour. A good plan is to grow them on ground heavily manured for a previous crop, such as autumn Cauliflowers; if the ground is deeply dug after the gathering of this crop, and left in a rough state during the winter, it will be in excellent condition for Parsnips without further additions of manure.

While the time of sowing must be governed largely by the state of the land, early sowing of the Parsnip crop is to be recommended, and so soon as the ground is in good friable condition, the seeds should be sown. They are somewhat slow in germination, and if they can be sown early enough for the young plants to become established before the drying winds of March rob the soil surface of moisture, it is a great advantage to the crop; on the other hand, it is better to wait than to sow them on wet ground, as the soil becomes caked and never works so freely afterwards. The seeds should be sown thinly in drills fifteen inches apart, covering them to a depth of about one inch. The hoe should be plied so soon as the seedlings appear, and, if the plants are thinned to ten or twelve inches apart, little further attention will be required beyond frequent hoeings throughout the season.

The Parsnip crop is in season from November until April and is much better left in the ground than lifted and stored. When spells of frost are expected, a few rows may be covered or some may be lifted to carry on supplies, but Parsnips retain their flavour much better in the ground than if lifted and stored. There are several excellent varieties of the Hollow-crown type, of good form and superior flavour, which have all the qualities desirable in a table vegetable. *W. A.*

SOCIETIES.

SALISBURY GARDENERS'.

The Lecture Room at the White Hart Hotel, Salisbury, was filled to overflowing on Wednesday, January 23, by members and friends of the Salisbury Gardeners' Society, on the occasion of a lantern lecture, "The Making of the Plant World of To-day," by Miss Barbara Gullick, B.Sc., daughter of the popular Secretary of the Society.

The Chairman, Mr. S. W. Tucker, in introducing the lecturer, said how very pleased they were to welcome her. They still had in mind her lecture on wild flowers, from which evolved the Wild Flower Scheme taken up by the City Corporation, which occasioned a considerable amount of interest throughout the district. The lecture that evening was in response to the unanimous invitation of the members of the Society.

Starting from the red-hot earth, the lecturer outlined the progress made by plants, from a time previous to the formation of coal, through the age of the giant reptiles, to the earliest flower which was already evolved before the chalk was laid down. (Attention was called to the present-day survivors of types once dominant over the whole earth, as well as to certain links in the chain of progress, which have now become extinct). After an outline of the opinions held through the ages on the mechanism of evolution, the lecturer showed slides suggesting the more recently advanced theories accounting for the rise of new forms in plants, leading to the conclusion that a great future for gardening lies in close observation, and intelligent plant-breeding.

Animated discussion followed, particularly on the remarkable acceleration of the rise of new forms created by the help of man, in comparison with nature unassisted, which has eternity in which to experiment. Mr. J. Pinder, in proposing a vote of thanks to the lecturer, mentioned how very much the Society was indebted to her for such an intellectual discourse. He was of the opinion that if the younger generation of gardeners would interest themselves more in the scientific side of horticulture, it would in due time benefit mankind in general. Mrs. Towner, seconded the proposal, and it was enthusiastically carried. The lecturer suitably responded.

On the proposal of Mr. W. F. Gullick, a hearty vote of thanks was accorded Mr. C. Craske for the loan of lantern, and manipulating the same. Some fine examples of Cypripedium Sanderianum were exhibited by Mr. W. Asher, and giant Parsnips by Mr. A. J. Hooper.

BRITISH DELPHINIUM.

This Society, which was only formed four months ago, held its first General Meeting at the Royal Horticultural Society's Hall, Vincent Square, on January 29.

There was a moderate attendance of members, presided over by Mr. C. F. Langdon, who opened the proceedings with a short speech, in which he spoke of the aims of the Society and of the interest already displayed by its members. He stated that the Delphinium had now risen to such a position as a border and a florist's flower that he considered it essential that there be a Society to further its interests. He appealed to amateurs especially to exhibit at the annual show, and expressed the hope that the interest of the amateur in the Delphinium would always be pre-eminent. Finally, he spoke of the splendid foundation that had been laid for the Society, through the activities of its officers.

The proposal that the Marchioness of Londonderry be elected President of the Society was made by Mr. Brandon, who, in making the proposal, spoke enthusiastically of the future of the Society, and appealed to all the present members to use every endeavour to enrol others, while he also emphasised the value and power of advertisement in promoting the growth of the Society. His motion was seconded by Mr. G. A. Phillips, and passed unanimously by the meeting.

The Hon. Secretary, Mr. S. Halford Roberts, then described the work done in connection with the Society since its inception, and also outlined the channels in which the Committee considered the future activities of the Society should be directed. He stated that there were now one-hundred-and-three members, including some in Canada, the United States of America, and Holland. The Society had become affiliated to the Royal Horticultural Society, and by so doing had been enabled to secure the latter's hall, free of charge, for the annual Delphinium Show, to be held on July 5. Mr. Roberts stated that several offers of medals and cups had already been received, and that the schedule for the show would be ready in a few weeks, when copies would be sent to each member. He stated that the Committee proposed to include in the schedule several articles dealing with the culture of the Delphinium, and also that a register of recognised named varieties of Delphiniums was also in course of preparation.

The Hon. Treasurer, Mr. G. D. Gold, being absent, a statement of the financial position of the Society, which appeared to be very satisfactory considering the short time it has been in existence, was placed before the meeting by the Hon. Secretary. The meeting then proceeded with the formal re-election of officers: Mr. G. D. Gold was re-elected Hon. Treasurer; Mr. S. Halford Roberts, Hon. Secretary; and Mr. A. J. Moir, Hon. Assistant Secretary. The Committee, Messrs. G. F. Langdon, G. W. Leak, C. A. Phillips, T. Carlisle, T. Bones, R. C. Pulling, A. J. Macself, Thomas Want, G. F. Barney, C. Reynolds, Mrs. Jenkins and Mrs. Roberts, was re-elected *en bloc*, its number being added to by the election of Mr. J. Kelway.

Mr. W. Hitch and Mr. G. S. Sandercombe were elected Hon. Auditors of the Society, and the meeting was brought to a close with a hearty vote of thanks to the Chairman.

BRITISH CARNATION.

The Annual Meeting of this Society was held in the Lecture Room of the Royal Horticultural Society's old hall, Vincent Square, on January 29, the number of members present being rather larger than usual. Mr. C. Engelmann, the retiring President, presided.

The notice convening the meeting was read, followed by the minutes of the last Annual Meeting, which were passed by the meeting. The Annual Report of the Council, copies of which were given out to the members present, was then discussed and severely criticised. The Chairman proposed that the Report be passed by the meeting, whereupon Mr. J. S Brunton objected, stating that the report, from a grammatical point of view, was a disgrace to the Society and not fit for publication. This lead to a very heated argument as the report had been drafted by a sub-committee, and had been passed by the Council after careful consideration. Mr. J. S. Brunton gave several instances to back up his statement, and formally moved an amendment, that the report be referred back to the Council to be re-edited. The amendment was seconded and put to the meeting, but was defeated, after which the vote was taken for the adoption of the report, which was carried. The report was a very lengthy one, dealing chiefly with the Society's annual show; *The Year Book*, which was issued for the first time last year; the visit of members of the Society to the nursery of Messrs. C. Engelmann, Ltd., and obituary notices.

Mr. L. J. Cook then read the statement of accounts, which showed that receipts for the year amounted to £487 12s. 1d., and expenditure, £377 3s. 5d., the balance in hand being £110 8s. 8d. The Treasurer pointed out that the expenditure was considerably higher than for the preceding year, and suggested that the curtailment of expenses during the coming year was advisable. The statement of accounts was then passed by the meeting, which next proceeded with the election of a President to succeed Mr. C. Engelmann. Mr. M. C. Allwood proposed that Lady Hudson be elected President of the Society, and stated that he had received a notification from her to the effect that she would be pleased to act as such if elected; the motion was seconded by Mr. T. Stevenson, and passed unanimously by the meeting. Mr. A. Metcalfe was proposed as Chairman of the Council, but the Secretary read a telegram from him stating that he did not wish to stand, whereupon Mr. G. T. Miller, seconded by Mr. M. C. Allwood, proposed that Mr. E. T. Willis be elected, a proposal which received the full approval of the members present and resulted in Mr. Willis being elected by a unanimous vote. Mr. F. Jordan was elected Vice-Chairman of the Council.

Mr. P. F. Bunyard was re-elected Hon. Secretary; Mr. L. J. Cook, Hon. Treasurer, a post he has held for twenty-one years; and Mr. E. F. Hawes, Show Superintendent. Mr. T. Pincher, with Messrs. W. J. Calder and Sons, were elected Hon. Auditors.

The next business before the meeting was the re-election of the retiring members of the Council, with a few exceptions, and the filling of the vacancies that had occurred. The retiring members re-elected were Messrs. F. W. Alesworth, A. Bedford, R. Campbell, M. Harris, and P. M. Patterson; while the new members elected were Messrs. M. C. Allwood, R. H. Hall, C. Engelmann, J. D. Simpson, E. S. Mason, M. Stather and J. W. Scott.

The question of trophies and cups was referred to the Council, after which Mr. Brunton expressed the thanks of the Society to Mr. C. Engelmann, for his services as President during the past year; to Mr. M. C. Allwood, who held the post of Chairman of Council, and to the other officers who had served the Society during the past year.

With a vote of thanks to the Chairman, and after another futile appeal by Mr. Brunton that the annual report be revised, the meeting was declared closed.

BRITISH FLORISTS' FEDERATION.

The annual meeting of the members of this Federation was held during the afternoon of Thursday, January 31, at the Connaught Rooms, Great Queen Street, London, W.C. Mr. J. Artindale presided over a rather small attendance. After the initial formalities had been disposed of, the Secretary, Mr. C. H. Curtis, read the Report of the Committee and Accounts for 1928. The former set forth the work done in connection with efforts to bring the flower-growing industry under the Safeguarding of Industries Act; the clearing of street traders from the vicinity of Covent Garden Flower Market; the handling of flowers and return of empties by railway companies; and the organisation of the British section at the great Ghent Show, which was attended with great success, thanks largely to the efforts of Mr. Jolis and Mr. George Monro, and the generous financial assistance from the Royal Horticultural Society and many friends.

The Accounts showed a balance of £110 17s. 2d. in favour of the Federation. The Ghent Show expenses came to £357 18s. 10d., while donations towards the cost amounted to £274 19s. 8d., leaving £82 19s. 2d. to be found by the Federation.

In moving the adoption of the Report, Mr. J. Artindale said that the membership of the Federation was far too small considering its importance. It was really the only Association which was solely connected with the flower trade, and each member should endeavour to induce other people to join. One suggestion he would make was that they should alter the date of the meetings, and hold them, say, once a month, or once in two months at Westminster, so as to give provincial members a better chance to attend. The Federation's part in the Ghent exhibition was really great, and everybody pulled their weight. He then referred to the loss sustained by the deaths of Mr. H. T. Mason and Mr. W. H. Page, who were very keen on the welfare of the Federation, and never missed a meeting. He hoped their positions would be taken by some younger members of their respective firms.

Mr. W. E. Wallace, in seconding, referred to the very good report, but regretted that the Federation was not getting the recruits it deserved. He referred to the loss of "two of nature's gentlemen," and the meeting stood in silence as a token of respect.

In moving a vote of thanks to the officers and Committee, Mr. Mills said that if the Committee could be given more work to do, they would be only too pleased to do it.

Mr. G. Monro, when moving the election of Mr. C. Engelmann as President, said that while the Federation did not increase in numbers, he thought that the standing and the weight of its members was increasing each year. The railway authorities and the French Transitaires, and the Covent Garden authorities, looked upon it as a much more united body than they did a few years ago; Mr. C. Engelmann was interested in the commercial side of horticulture, and his varied experience fitted him to act as President. Mr. D. Ingamells, in seconding, referred to Mr. Engelmann as a worthy successor to those who had preceded him.

Mr. Engelmann said he was very reluctant to accept the position, and to follow the series of excellent Presidents. One reason he did accept was because he appreciated the honour, and found it very difficult to say no. "Our B.F.F. has a big name, and we should represent the whole of the florist industry—and when I look at our membership list and balance sheet I am disappointed. I do hope we shall get more members, because in other countries we are looked upon as a 'very big thing.'"

Messrs. George Cobley and Co., Southampton Street, were heartily thanked for services rendered and re-appointed Hon. Auditors.

Mr. Ingamells then moved that the *Bulletin* be restarted. He said that it would be a very important link between the Committee and the provincial members. In seconding this, Mr. Monro said that the Federation had few other means of advertising itself. The motion was adopted, and the Secretary stated that he was more than delighted that the meeting had passed this resolution. When the Committee decided to drop the *Bulletin* on account of the expense he felt that they were losing touch with members.

Mr. White then moved "That the Committee take an early opportunity of discussing how the membership of the Federation can be improved." In seconding this resolution, Mr. Artindale urged the holding of at least six meetings a year. Mr. Fincham said his mind went back to a meeting held in the Strand, and he wondered whether the Committee could not do something more in the winter to gather members of the Federation together, and discuss subjects of interest to the trade. He moved, "That as time allows, a subject of interest to the Federation be brought up and discussed." This, like the previous motion, was carried.

Mr. J. W. Cross, Wisbech, and Messrs. J. H. Lalham and Co., Norwich, were elected members.

This concluded the general business, and tea was served prior to the address promised by Mr. H. Jolis.

A Buyer's View of the Marketing of Flowers and Plants.

Mr. Jolis stated that in Covent Garden Flower Market he always felt as though he were in Paddington Station, with a few flowers thrown in and about, and he was thoroughly ashamed to take his friends who were not in the trade. Members had the privilege of working in the most beautiful trade in the whole world, and yet could find no better way to dispose of the flowers! And if he, as a buyer, was ashamed, what must the grower feel like, who had spent months in bringing his flowers to perfection? It is exactly the same place as it was thirty years ago, in spite of the growth of the trade, but he was looking forward to the future, and believed that the future of the Federation was bound up with the future of Covent Garden. Indeed, he hoped the time would come when Covent Garden Market would belong to the trade, and be used by the trade for its best advantage. There was a time when it was possible for the trade to buy Covent Garden Market; that opportunity was allowed to slip. Much might be done to improve the market for the display of flowers; outside firms displayed their flowers and made things convenient for buyers. There was a lot of rubbish in the market, and that had the effect of making good quality blooms look third rate.

One of Mr. Jolis's grievances was the variation in prices; no one seemed to really know what the stuff was worth; it was one price early, and an hour or so later there might be a drop of 2s. In regard to cash buying, he considered business was done in a loose way; if some firms could give sale slips, why not others? The reception of the flowers at the market was bad, and should be improved.

He had been fortunate enough to visit some of the most wonderful cut-flower nurseries in this country, and had seen Carnations that were marvellous, but generally, the grower cut too late. A bloom cut when it is perfect is not perfect when bought, and still less perfect when it reaches the ultimate purchaser. It has, say, six hours in water and twelve hours in a box; it is then bought and taken away by the florist, and is probably on show another six hours before being sold. The grower looks at his perfect blooms, and forgets that directly they are perfect they begin to deteriorate.

Mr. Jolis offered many other criticisms regarding bunched flowers, length of stem, and packing paper; the lack of variety in flowering plants, and the apparent absence of the regulation of supplies of flowers.

In Mr. Jolis's opinion, one of the first things to be done was to hold the market for the benefit of the trade, and make the market a place for the display of the finest flowers the world produces.

In opening the discussion, Mr. Monro said that every one of the members ought to thank Mr. Jolis for the way in which he had laid before them some of the points which they knew were wrong; some of the points which were wrong which they did not know; and some points which, perhaps, they did not agree with; but without doubt, nothing but good could come out of a discussion of that kind between the different sections of the trade. Almost every single sentence expressed by Mr. Jolis made a point that they could appreciate, and in some cases alter. One or two points he wished to refer to. Variation in prices was a sore point with retailers. To a great extent that was absolutely unavoidable; they had a perishable article which had to be sold during the best period of its life, and the demand varied so much that it was quite impossible to avoid a variation of price and quality during the market hours. Sometimes prices fell, sometimes they rose, but he could assure Mr. Jolis that the variation was not so great now as it was in the past, and the salesmen did what they could to avoid an undue variation. He agreed with Mr. Jolis about the damage done to flowers if put on show; but this counsel was the counsel of perfection. Mr. Jolis's point of view was not necessarily that of all other buyers. In regard to bunching, the large bunches have evolved themselves according to the demand of the buyer. There was a time when Chrysanthemums were received in handle baskets, each containing about twenty-four bunches. And he could go back to the time when every single bloom came loose. Then came a request that growers should bunch everything, except specimen blooms, and the growers acted accordingly. As to paper, he agreed they often saw most awful colours, and the most fearful combinations of paper flower and colours. He thought the trouble started when the growers of Chrysanthemums were also growers of Tomatos, and they used the same kind of paper for flowers as they used for packing their Tomatos. They had to remember, however, that all types of packing were evolved at the request of, or in an endeavour to please the buyer, who had the last word.

Mr. A. W. White said that although he did not agree with all that had been said, some of it was very sensible. He was firmly convinced that if every bunch of forced Tulips was wrapped up nicely in a sheet of paper, the right way out, it would be of benefit to the trade, yet not only salesmen in London, but in the provinces also, think there is something wrong with flowers when so packed. Even when one was left open for show they thought it was a special sample. Growers knew very well that a bunch of Tulips thus wrapped would carry better to the other end, but they could not persuade the buyers that this was so. Mr. Jolis wanted a young flower with a long stem; that was not possible in many cases, but if a Daffodil were cut a day later it would have another inch of stem, and still be a good bloom. "We do want records," said Mr. White. If a man sells at various prices, how can he know what to pay us. All he can do is to pay us as much as he thinks we will be satisfied with! The retail buying that went on in Covent Garden was a nuisance, people who come round and buy eighteen-penny-worth of flowers should be prohibited by the market authorities. From his point of view, as a grower living one hundred miles away, he had often wondered at the little variation in the prices, not only in Covent Garden, but throughout all the markets in Britain. The value received for Daffodils and Tulips he was sending to eight markets would not vary more than five per cent.

Mr. Ingamells stated there was not a salesman in Covent Garden who did not keep a record of every sale he made. In regard to bunching, the smaller blooms were bunched in sixes or twelves because they travelled better. He was glad the meeting had decided to re-issue the *Bulletin*, and he hoped Mr. Jolis's paper would be printed therein, for the benefit of salesmen and growers.

Mr. Fincham spoke from the point of view of one who was both grower and salesman. Mr. Jolis denounced Covent Garden, but he (Mr. Fincham) had never yet seen good stuff remain unsold. As one who loved Covent Garden, he considered flowers wanted nothing to adorn them. He was all in favour of improvement, but who would foot the bill? The salesman cannot pay more rent, and the cost of improvements would be passed on to the grower, not to the consumer. In regard to bunching and packing, if he offered a special line and buyers asked him to save some boxes for the following day, he did not change his method, and if the buyer came back again he regarded the packing as satisfactory.

Mr. Jolis replied to points raised, and was accorded an enthusiastic vote of thanks.

A circular letter was then read from the Dutch Flower Export Company of Haarlem, touting for private orders. Mr. Jolis and Mr. Artindale said that a matter like that justified the existence of the Federation, and they thought it provided a very strong case for the Ministry of Agriculture in regard to some form of safeguarding. Mr. Engelmann considered that to ask for a tariff on imported flowers was like crying for the moon, but they should ask for the application of the Act for marking foreign produce.

In moving a vote of thanks to the President, Mr. White said they had had Mr. Englemann on the Committee and had proved him there, and now they had found him an excellent President.

Later in the evening, members and friends, including many ladies, dined together at the Connaught Rooms under the Presidency of Mr. C. Engelmann. The tables were beautifully decorated with Tulips, Daffodils, Carnations and Roses, and an excellent musical programme was provided. The principal speakers were the President, Sir James Slade, Mr. H. Jolis, Mr. Artindale, Mr. A. A. Fincham and Lt.-Col. F. R. Durham.

LEEDS PAXTON.

The above Society held its annual Dinner on January 26, at the Victoria Hotel, Leeds; there were several representatives of other West Riding branches, and of Leeds University present.

Mr. C. F. Pragnell, the Chairman, in proposing the toast of "The Society," said he wished to acknowledge the good work done by the Committee and Secretary, Mr. F. Goodhind. The Society had never been so well served as during the past year, and so long as it had efficient and active officers, it would always remain on a sound basis.

Mr. H. J. Hall proposed the toast of "Members from Kindred Societies." Mr. L. Lodge, responding, stated that he would like to see closer relations existing between the various Paxton Societies of the West Riding. Mr. W. J. Morley (Wakefield) said he thought the Leeds Society should make much more use of the Leeds University.

Obituary.

Gerald Garnett.—By the death of Mr. Gerald Garnett, North Lancashire agriculturists, horticulturists and cricketers have lost a friend and supporter. At the home of his family, Wyreside, Dolphinholme, which estate adjoins the Abbeystead Estate of the Earl of Sefton, where His Majesty the King has on several occasions enjoyed grouse shooting, the Garnetts have a fine estate, and the gardens are noted for their Rose gardens and herbaceous borders, which have been Mr. Gerald's special interest, while Ulverston, Southport, and Lancaster have borne witness to the excellence of the cultivation at Wyreside. Mr. Garnett, in addition to being a highly successful exhibitor at these shows, was always willing to stage a non-competitive exhibit at other shows. He was the youngest son of the late Mr. H. Garnett, was educated at Cheltenham, and was afterwards prominent in agricultural and cricket circles, on several occasions a team of cricketers from the family challenging established teams, in 1874 defeating the Western C.C. at Manchester, and in 1876 the Free Foresters at Sutton Coldfield. He had a long connection with the Lancaster C.C., and for several years headed the batting average. He was prominent in all farming circles, and was the first Chairman of the Lancashire and Westmorland Farmers' Association, occupying this position for twenty years, and was connected with the Royal Lancashire Agricultural Society's Show. For many years, however, his chief interest was in the gardens at Wyreside, where he was known as a keen Rosarian and a discriminating and successful grower of herbaceous plants.

René Jadoul.—We regret to announce the death of M. René Jadoul, a prominent figure in Belgian horticulture, at the age of sixty-one years. He was a nurseryman at Gembloux, and was general secretary of the Belgian Nurserymen's Syndicate; he had obtained the distinction of Chevalier de l'Ordre de la Couronne and several other decorations. He was born at Lille, and there obtained his horticultural education, but on the death of his father he settled in Belgium and founded at Gembloux his nurseries and seed-grounds. There he quickly became the centre of horticultural life; he specialised in Dahlias, but was a successful all-round nurseryman, and had a large clientèle. Unfortunately, the trials and difficulties of the war period undermined his health, and he was obliged during the last few years to curtail his multifarious activities. He died quite suddenly, having appeared, until twenty-four hours before, to be in fair health.

James Wilson.—Late of Messrs. Brown and Wilson, Market Place, Manchester, Mr. James Wilson died at his home, 4, Duncan Road, Langsight, in that city, on Friday, January 25, aged seventy-two. The son of a well-known East Lothian farmer, he served his apprenticeship to the seed trade with Messrs. Drummond Brothers, of Edinburgh, in the 'seventies of last century. Entering the service of Messrs. W. Drummond and Sons, he spent about three years in Stirling, and was subsequently in the employment of Messrs. Thomas Perkins and Sons, Northampton. In the early 'eighties, he came to Manchester as first counter-hand with Messrs. Dickson, Brown and Tait, in whose service he remained until 1888, when he, and the late Mr. John Brown, entered into partnership, and established the business which is still carried on at the same address. On the death of Mr. Brown, in 1902, he was joined by Mr. Manby Gibson, and the partners continued the trade of agricultural and horticultural seedsmen until July, 1927, when, owing to Mr. Wilson's declining health, the business was sold to its present proprietor, who stipulated that he should retain the old name. Mr. Wilson was one of the first to recognise the sterling qualities of the wild White Clover, which early came under his notice at the Cheshire County Agricultural College at Holmes Chapel, and whose merits he proved on his brother's farm in the Lothians. In those days it was more difficult to induce farmers to buy seeds of it at half-a-crown a pound than it was when the price soared to one guinea and upwards. Mr. Wilson was of a genial disposition and much respected by all with whom he came in contact. He leaves one son who, however, is not interested in the seed trade.

ANSWERS TO CORRESPONDENTS.

Creepers for Walls, etc.—*C. N.* (1) The most effective creeper for keeping a wall dry is the Irish Ivy, which is evergreen, has broad leaves, long stalks, and the blades hang down and thus shoot off the rain as it falls. There are other broad-leaved varieties, such as Hedera Helix Roegneriana and H. H. dentata, but they are not more effective in keeping off rain, while the latter is more open in habit. There is usually a difficulty in getting clinging climbers to adhere to a lime-washed surface, but boards or a trellis would overcome the difficulty. Ivy is suitable for both the walls mentioned. (2) The Oak logs will not interfere with the drainage of the rockery, but they have two faults. They are liable to decay after a number of years and let the soil down. That may be remedied by rebuilding the portions that sink. The rockery may want replanting in any case by that time. Wooden logs also harbour voles, otherwise named field mice, which eat off the bark of the shrubs. This will not matter so much, if no shrubs are planted on the rockery. It will be necessary to add at least six inches of a compost of loam, leaf-mould and sand over the clay for alpine plants.

Cumberland Natural Grasses.—*J. B.* It would be necessary to flower the grasses on any particular piece of turf to be certain as to what it contained, but the more common and most likely species are Festuca ovina and its varieties, F. duriuscula, Agrostis vulgaris, A. alba, Poa pratensis, P. nemoralis, P. trivialis, Anthoxanthum odoratum, Cynosurus cristatus, Phleum pratense, Alopecurus pratensis, Avena pratensis, and A. pubescens. More common at lower elevations than the above are Agrostis canina, Trisetum flavescens, Triodia decumbens, Koeleria cristata, Molinia caerulea and Lolium perenne. With the exception of the last-named, this second list is never sown for the purpose of making a lawn. Some of them might be present in Cumberland turf, and some of them might be avoided when the turf is being cut. The two species of Avena in the first list are likely to be only occasional. All of the above grow in Cumberland and many more besides.

Names of Plants.—*W. S. L.* Helipterum eximium, South Africa. — *G.* Petasites fragrans; Aucuba japonica var. dentata.

Plum Trees Failing to Fruit.—*R. J. C.* Your Plum trees ought not to fail to fruit unless the compost or cultural conditions are at fault in some way or other. Few hardy fruits present less difficulties in their culture; they succeed equally well exposed to any aspect unless the flowers are damaged by late spring frosts. The soil should be of the best to compensate for the absence of sunshine to warm the soil on north and east aspects. Good drainage must be provided and where no natural chalk or lime is present in the soil, some must be added before success can be attained. If you think your trees are in soil that is not well-drained or is lacking in lime, lift them, cut back any strong roots, arrange the roots near the surface where the soil is drier and warmer, and mulch and water during the summer months. Winter spraying should not be necessary every year, as, under healthy conditions, the Plum is less subject to disease than any other stone fruit, and aphides are easily dealt with during the growing season.

Communications Received.—F. K. S.—A. W. A.—W. A.—J. P.—J. H.—F. J.—G. A.—H. G. C.—H B... O.—C. R.—R. W. T.—W. I.—W. F. W.—J. C.—A. O.—F. B.—H. B.—G. H. C.

THE Gardeners' Chronicle

No. 2199.—SATURDAY, FEBRUARY 16, 1929.

CONTENTS.

Alpine garden—
  Isopyrum thalictroides 116
  Linaria origanifolia 116
  Oxalis tetraphylla... 116
Awards of Garden Merit, R.H.S. ... 112
Book, notice of—
  The Rose 124
Bulb garden—
  Crocus iridiflorus ... 116
Economics of fruit-growing in England 125
Flower garden—
  Antirrhinums ... 118
  Salvias 118
Fruit garden—
  Woolly aphis ... 127
Hardy flower border—
  Heucheras 116
  Linaria triornithophora 117
  Lychnis Haageana... 117
  Viola Arkwright's Ruby 117
Hemerocallis 122
Indoor plants—
  Iris gracilipes ... 116
Iris Society, the ... 112
Lord Lambourne, the late 111
Malcolm, Mr. Alexander, V.M.H. 112
Obituary—
  Hitchcock, Mrs. Arnold 129
  Inglis, Charles D. ... 129
  Muir, James ... 130
Orchid notes and gleanings—
  Epidendrum vitellinum 116
Passion flower, the ... 119
Plant breeding problems 111
Plant history in nomenclature 122
Plants new or noteworthy—
  Astilbe koreana ... 119
Potato news 127
Primula, the genus ... 124
R.H.S. President and Council for 1929 ... 111
Societies—
  Manchester and North of England Orchid 129
  National Chrysanthemum 129
  Royal Horticultural 128
Treasure box, the ... 123
Trees and shrubs—
  Leucothoe Davisiae 119
  Leptospermum scoparium 119
  Salix daphnoides ... 119
  Vaccinium ovatum 119
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 120
Week's work, the ... 114

ILLUSTRATIONS.

Crocus iridiflorus 113
Iris gracilipes 115
Leptospermum scoparium at Avoca 119
Lychnis Haageana 117
Malcolm, Mr. Alexander, V.M.H. 112
Ward's, Mr. F. Kingdon, tenth expedition in Asia 120, 121

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.6°.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, February 13, 10 a.m. Bar. 30·6. Temp. 22°. Weather, Light Snow.

Plant Breeding Problems.

The high hopes with which the new science of Genetics was launched at Cambridge in 1909 must remain vividly impressed on the memory of all who, after the establishment of the Balfour Professorship, heard William Bateson deliver his introductory lecture. The key to the mysteries of evolution seemed to be in his grasp, and he spoke in the spirit of *claviger* of the broad river of progress that lay ahead. Where are we now? As Bateson regretfully admitted at Montreal in 1922, the origins of species are, perhaps, more obscure, or, at least, as controversial as they were before the coming of Mendel. The workings of heredity are, perhaps, less mysterious and more subject to control than they were; but the practitioners of the applied science of breeding have been disappointed. The laws of Mendel, precise as they are, are not proving to be ready tools; we still await the mass production of animals and plants dowered with desirable economic qualities. In the technical terms of the geneticist, *quantitative* characters are not so amenable to discipline as *qualitative*; the aesthetic perfection of a "Ruby" Primula is not paralleled by a super-sweet Sugar Beet, or a five-hundred-egg hen. The facile successes of the cereal breeders are not likely to be repeated. Some of the obstacles to progress may be gleaned from Mr. F. L. Engledow's review of plant breeding in a volume[*] recently published by the Royal Agricultural Society. Perhaps the greatest difficulty of all arises in this manner. In relation to methods of fertilisation all plants fall into one or other of two categories: Autogamous, or self-pollenating; exogamous or out-pollenating, and—here is the breeders' difficulty—some of the latter class are definitely self-sterile; they will not set seeds when selfed. The cereals and most of the Peas are normally self-pollenated, whereas the Brassicas and Beets are normally cross-pollenated; and of the latter the Cabbage is self-sterile. Plants which are normally selfed have, from the breeder's view point, this advantage: It is easy to establish a pure line, that is, a stock starting from a single plant and breeding true. Moreover, a pure line of such plants remains free from contamination—loss of purity—when grown in the open. But an out-pollenated plant does not breed true, being always open to foreign pollen. The breeder finds it difficult (or, if there is self-sterility, impossible) to start from a single plant and to protect a mass of plants from outside pollen. As Mr. Engledow shows, recent work on the Brassicas has brought this difficulty to the front, Cabbage, Brussels Sprouts and Borecole being absolutely self-sterile, and others, such as Kohl Rabi, very nearly so, although crossing freely *inter se*. But now a further and less amenable difficulty crops up. It seems to be a fact that, for some reason of which the scientific explanation is in doubt, heterozygous, that is, non-true-breeding plants, are naturally more vigorous than homozygous or true-breeding plants. The F_1 generation of a cross generally overtops its parents. Recent American work with Maize has proved that if the plant is continuously selfed, and so made "pure," it becomes, commercially, quite worthless as "corn." It is consequently a fair inference that in the case of plants of the Cabbage tribe their economic qualities of vigour, etc., are consequent on their condition of (for want of a better term the breeder calls) heterozygosity. If this, indeed, should prove to be the case, the difficulties of the scientific breeder are greatly aggravated. As Mr. Engledow trenchantly points out, there is no problem in genetics that more urgently awaits solution than the inheritance of such quantitative characters as vigour, and particularly the precise meaning of heterosis, the term which the American school invented for the phenomenon of hybrid vigour. Speculations have not been wanting. One of the first will be found in the early literature[†] and was the suggestion that heterosis is due to the meeting of dominants; this view is now in favour in the U.S.A. The difficulty in relation to this explanation of the matter is that the vigour, so far, has not turned up again in subsequent generations as theory would require. There is much of scientific interest in this new work on the Brassicas, of which Mr. Pease, of Cambridge, is the chief exponent in this country. The chromosome numbers of the eight species of the genus differ one from another with one curious exception. The same figure—9—is found in the Cabbage and Radish groups, with the expected result that, with this exception, the species are inter-sterile. The bulb of Kohl Rabi is conditioned by three clear Mendelian factors. Of some spectacular—if not of economic—interest was a descendant of a cross between a Cabbage and a plant of Brussels Sprouts which Swift might have pictured in Brobdingnag, for it was sixty inches high and bore sprouts twelve inches across!

Our Supplement Plate.—With this issue we have pleasure in submitting, as out Supplement Plate, an illustration of the uncommon Aloe supralaevis, Haw., a native of South Africa. In common with other members of this genus, this species, in cultivation, enjoys an average temperature of 60° and dry atmospheric conditions throughout the winter months, during which period the plants should be kept fairly dry at the roots, although during the summer they enjoy ample supplies of water and moist atmospheric conditions. Under cultivation, this species may attain a height of six or more feet, and does not flower until it attains some age and size; the flowers are orange-scarlet in colour, fading to yellow with age. The general habit of the plant is well depicted in the illustration. Although it may be successfully grown to flowering size in a large pot, this Aloe, in common with many of the other species, is only seen at its best when planted out in a well-drained border in a suitable house. Aloe supralaevis, and many other species, are grown extensively at La Mortola, La Selva, and other gardens on the Riviera, finding the conditions there ideal, and attaining a large size. It is easily raised from seeds, when obtainable, or the tops of the shoots may be cut off and rooted as cuttings; quite large shoots may be used for this purpose.

Royal Horticultural Society's President and Council for 1929.—The Fellows of the R.H.S. who attend the Annual Meeting on February 26, in the New Hall, will have before them the following nominations:—President, Mr. Gerald W. E. Loder; Treasurer, Mr. C. T. Musgrave, V.M.H.; Members of Council: Mr. E. A. Bunyard, Dr. A. W. Hill and the Hon. H. D. McLaren; Vice-Presidents, the Duke of Bedford, the Duke of Portland, Viscount Ullswater, Sir James Knott, Sir Daniel Morris, V.M.H., Sir David Prain, V.M.H., the Hon. Vicary Gibbs, V.M.H., Mr. E. A. Bowles, V.M.H., and Mr. J. C. Williams; Auditor, Mr. Alfred C. Harper. The retiring members of Council are Dr. A. W. Hill, Mr. George Monro and Mr. C. G. A. Nix: in its Report for 1928, the Council records its appreciation of the services of these gentlemen, and expresses the hope that Dr. Hill will be elected to serve for another period of years, as he was recently elected under the provisions of the new Bye-laws. The Council also states that it finds a difficulty in appreciating sufficiently the keen interest, enthusiasm and generosity of Mr. George Monro during his term of office, and the long service of many years, almost without interruption, of Mr. C. G. A. Nix, both on the Council and Finance Committee, has been of the greatest value in the conduct of the Society's affairs.

The Late Lord Lambourne.—The Council of the Royal Horticultural Society record with very deep regret the death of The Right Hon. Lord Lambourne, P.C., G.C.V.O., V.M.H., the President of the Society, the loss of whom will be felt by all the Fellows, and friends of horticulture. Lord Lambourne (then Colonel Mark Lockwood) joined the Society in March, 1904, and in 1914 took his seat on the Council. Since that date he took great interest in the activities of the Society, and was elected President in 1919, after the resignation of Field-Marshal Lord Grenfell. He continued to hold this office until his death. In 1926 he resigned his positions on other institutions and devoted himself entirely to the welfare of the Society, attending almost without fail all the meetings of the Council (November 20 being the last occasion). His devotion to the Society and its work, and his geniality and kindness of heart, were all factors in the rapid growth of public interest in horticulture, and under the ten years of his administration the Fellowship of the Society grew from 14,400 to over 26,600. A full obituary will be published in the Society's *Journal*.

The Severe Weather.—The intensely cold and severe weather which has prevailed for some considerable time over a large part of Europe, spread during the early part of this week to the British Isles, and at the time of going to press we are in the throes of arctic conditions, with icy winds, severe frosts, and, in many places, gales accompanied by heavy falls of snow; the weather prophets are very pessimistic in their outlook, and state that there are no signs of an early termination of the cold spell. Great discomfort is being experienced throughout the country, for the frozen roads make travelling a very difficult task, while the heavy snowfalls have also caused considerable traffic delay. In Covent Garden Market the severe weather conditions are reflected in the shortage of salads, the crippled flowers, and in the poor demand for fruits in general, while salesmen experience great difficulty in disposing of their produce even at prices that must be far from profitable for the producers.

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[*] *Agricultural Research in* 1927, John Murray, 1928.

[†] Keeble and Pellew, *Jour. Gen.* Vol. 1., p. 10, 1908.

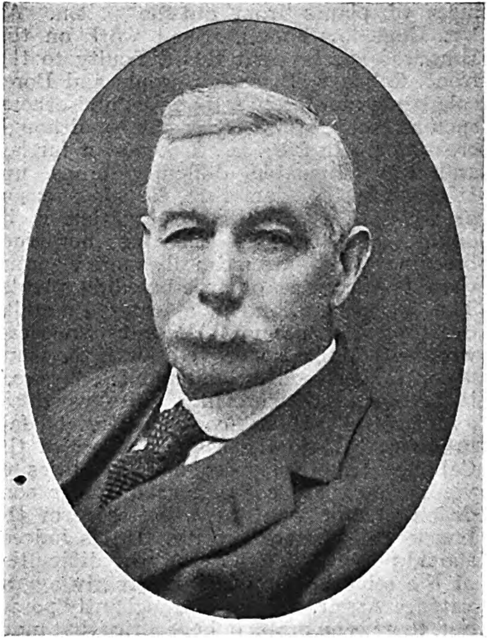
The Iris Society.—The Iris Society is holding its annual show in the New Hall of the Royal Horticultural Society on June 6 and 7. It is expected that the exhibition will contain the largest collection of Irises that has ever been exhibited at one time, and it is proposed that the exhibition should be international in character. Accordingly, deputations have been invited from Iris Societies and Committees in the United States of America, Canada, France, Germany and Holland, and growers in these countries have been asked to exhibit. The Iris show will be opened by His Excellency the French Ambassador at 12.30, and will be followed by a lunch at which the Society will entertain its distinguished guests, and for which members of the Society will be able to take tickets. During the week representatives of the Garden Clubs of America—some 125 persons in all—are visiting the country; they will be invited to the show and will be entertained at tea. In addition to the annual show, the Iris Society holds at least two dinners in the year, which are followed by a discussion; it has published two numbers of an illustrated *Bulletin*, of which Mr. Dillistone is editor. The Society is also drawing up, under the supervision of Mr. Peter Barr, a check-list of Irises, and, under the editorship of Mr. Dillistone, it is preparing for publication the writings of the late Mr. W. R. Dykes, which have appeared in *The Gardeners' Chronicle* and other periodicals. Anyone interested in Irises is invited to join the Society, and apply for particulars to the Hon. Secretary, Mr. G. L. Pilkington, Lower Lee, Woolton, Liverpool.

"Gartenschoenheit" for January.—The January issue of our German contemporary, *Gartenschoenheit*, contains a number of fine coloured plates of Orchids, some of which, being of English origin, will be of especial interest to English readers. Among others, we note Cattleya Fabia, from Dell Park, Englefield Green; and in black and white, Odontoglossum Toreador, from Messrs. Charlesworth's nurseries at Hayward's Heath; Laelio-Cattleya Profusion, from Brockhurst, East Grinstead; and Cypripedium (Paphiopedilum) Baron Opoix, also from Brockhurst. The black and white plates are excellent, and are given every advantage on good, hard-surfaced paper; the coloured plates are pleasing, but not altogether satisfactory, especially as regards the colour of the foliage. The best is, perhaps, Dendrobium thyrsiflorum, which makes a very pretty picture with its yellow and orange blossoms shown against a blue background. Camillo Schneider writes interestingly about modern Orchid-growing, and a number of other articles on various subjects make up the rest of the issue, including one on "The English Park," by Johanna Schopenhauer.

A Hybrid Cotton.—Dr. S. C. Harland, of the Cotton Research Station, Trinidad, B.W.I., writes:—"We have recently made an interesting hybrid between Gossypium Sturtii—a native Australian species, and Gossypium hirsutum, a native American species. I am under the impression that hybrids of native Australian with native American plants are very rare, and should welcome such information on the subject as may be in the possession of your readers."

Concerning Tulips.—We are glad to learn that Messrs. Martin Hopkinson, Ltd., have in preparation "The Book of the Tulip," by Sir A. Daniel Hall, Director of the John Innes Horticultural Institute. This volume, fully illustrated in colour and black and white, is an attempt to bring together the main facts that are known about the Tulip, and is intended primarily for the general gardener and lover of flowers. It is a work which all Tulip lovers will eagerly await, especially from an author who is an authority on the subject, a skilful cultivator, and has "the pen of a ready writer."

Mr. Alexander Malcolm, V.M.H.—Probably no one chosen by the Council of the Royal Horticultural Society to receive the Victoria Medal of Honour in Horticulture has been more surprised than Mr. Alex. Malcolm, of Edrom, Berwickshire, who had "almost forgotten about Sweet Peas," and had no idea his name was being put forward for the honour. When in business at Duns, Mr. Malcolm found relaxation and pleasure in gardening, and many years ago, when Henry Eckford was the leading distributor of novelties, he and a small band of horticulturists took up the cultivation of Sweet Peas with great enthusiasm and success. He exhibited at Edinburgh, and there met Mr. H. Eckford, who did not recognise the variety Miss Willmott, as shown in fine form and colour by Mr. Malcolm. When the waved Sweet Pea—Countess Spencer—arrived, about twenty-five years ago, Mr. Malcolm commenced to raise new varieties and, working on Mendelian lines, obtained many fine results, or, as he puts it, "Time and again, I got almost exactly what I wanted." Like many other people, he tried crossing Sweet Peas with species of Lathyrus, but without success, but on one occasion, using the utmost care, he crossed Cherub (under glass) with the pollen of the common Broom. Two pods formed and showed some resemblance to those of the Broom, but had fourteen seeds per pod. All the seeds germinated, and although no yellow-flowered seedlings appeared, the progeny were extra vigorous, very hardy, fragrant and very wavy. The varieties Renown, George Shawyer and Dignity came from the seeds of one of the pods. Later, Mr. Malcolm raised other varieties, including Royal Sovereign and Grenadier. Undoubtedly a very successful raiser for many years, Mr. Malcolm affords another instance of the success obtainable by an amateur gardener who makes a speciality of one flower and takes a practical and scientific interest in its improvement.



MR. ALEX. MALCOLM, V.M.H.

Gardeners' Royal Benevolent Institution.—This charity will benefit to the extent of about £30 through the activities of Mr. C. H. Cook, of the Royal Gardens, Windsor, who was chiefly responsible for the successful organisation of a whist drive and dance which was held recently in the Windsor Guildhall. A party of about three hundred assembled, and it was generally agreed that the event was a great success. Mr. Cook is to be congratulated upon his active interest in this charity, and it is to be hoped that other prominent gardeners will follow his splendid example.

Bracken Disease in Scotland.—Professor K. W. Braid, of the Botany Department, West of Scotland Agricultural College, informs us that since we published an account of his investigations in the control of Bracken, in our issue for January 29, p. 56, he has had a number of letters from readers of *The Gardeners' Chronicle*, and he and his co-worker, Mrs. N. L. Alcock, are looking forward to receiving observations from some of them during the course of the year. He also informs us that the pamphlet referred to in our note is not published by the West of Scotland Agricultural College, but is a reprint from the *Scottish Forestry Journal*.

The Temperate House at Kew.—It is pleasant during the dull, cold days of early February, to leave the outdoor garden and enjoy a display of forced, early-flowering trees and shrubs, such as may now be seen in the Temperate House at Kew. They are grown in large pots and thinly dispersed among the Tree Ferns and other foliage plants, the effect thus obtained being extremely delightful. Notable subjects in flower at the present time include Magnolia Soulangeana and M. stellata; a considerable number of plants of Prunus triloba plena, with dainty, rich pink blossoms; Pyrus floribunda and P. Scheideckeri; the beautiful Forsythia spectabilis, Staphylea colchica, and Rhododendron sinense, better-known, perhaps, as Azalea mollis.

Richmond Park Golf Pavilion.—We understand that a scheme is being considered by the Office of Works in connection with the extension of the golf pavilion at Richmond Park. It is announced that the need for such extension is particularly noticeable in the summer months, the two public golf courses being so popular that players occasionally have to wait for periods of from one to three hours before their turn arrives to start. Over 100,000 rounds are now played on these courses in a year.

R.H.S. Awards of Garden Merit.—Seven plants are recorded in Vol. LIV, Part 1, of the *Journal* of the Royal Horticultural Society, as having received the R.H.S. Award of Garden Merit. They are: Crataegus × Carrierei (December 8, 1925), a Thorn which was described by M. E. A. Carrière in *Revue Horticole*, 1883, p. 103, figures of both the flowers and fruits being given in colour. It was raised from seed of C. mexicana (syn. C. stipulacea), which species it strongly resembles, and is a strong-growing small tree or large bush, producing large corymbs of white flowers during late May and June. These are succeeded by rather large, orange-red fruits which remain on the tree some considerable time and, in conjunction with the rich autumn tints of the foliage, impart to it a very striking and attractive appearance. Polygonum Aubertii and P. baldschuanicum (October 8, 1928), rank among the most beautiful of climbing flowering plants, and it is a controversial point as to which of these two subjects is the most beautiful. Their distinguishing characters are not very pronounced, both producing panicles of pink-tinted flowers, the panicles of P. Aubertii being narrower than those of P. baldschuanicum, while the flowers are often not so pink and are sometimes tinged with green. They are both ideal subjects where free-growing climbers are required for the covering of pergolas, etc. Sedum spectabile (October 3, 1927) is a well-known and popular herbaceous perennial, flowering, as it does, when the majority of herbaceous plants are past and remaining attractive well on into October. There are several varietal forms of it, notably Brilliant and atropurpureum, both of which have darker flowers than the type. Prunus Davidiana alba (January 23, 1927), belonging to the Amygdalus section of Prunus, is a deciduous tree of great beauty, and is described as hardy in the south and mild parts of the country, but requiring a sheltered position in bleak districts. There are two forms, one with rose-coloured flowers, and the other with white; the latter is considered the more decorative of the two and has therefore received the Award. Phacelia campanularia (July 4, 1927), is a desirable annual of easy culture; it bears large, widely bell-shaped flowers of deep gentian-blue, producing them, when grown well, over a long period. It is hardy and seeds may be sown during autumn or spring where it is to flower. P. campanularia is a native of California, and was described in *The Gardeners' Chronicle* so long ago as 1882 (Vol. XVIII, p. 51). The last plant described as having received the Award is Scilla siberica, already a popular bulbous subject in gardens, which, having once been planted—in autumn—will look after itself and flourish and increase. It is later-flowering than Scilla bifolia, and has larger and more open bell-shaped flowers, which are of a deeper blue; there are several forms of it, variety atrocoerulea, sent to Wisley by Messrs. van Tubergen, of Haarlem, being considered the best, although both the white and the pink forms are well worth growing.

Easier Access to Wisley Gardens.—Fellows of the Royal Horticultural Society living in and about London, who have not been able to visit Wisley Gardens very frequently owing to the difficulties attached to getting there, will be pleased to learn that a new express motor-coach service has been started between London and Guildford. The service has been organised by the Skylark Motor Coach Co., Ltd., and the coaches will leave the respective termini, North Street, Guildford, and Oxford Circus, London, at intervals of an hour from 7.30 a.m. to 10.30 p.m., from Guildford, and to 11.30 p.m. from London. The single fare is 2s. 6d., and the return fare 4s. 0d.; these charges compare very favourably with those of the railway. The journey from London is made via Marble Arch, Shepherd's Bush, Hammersmith, Esher, Cobham and Ripley, and passengers may board the coach or alight at any place *en route*. Time-tables and full particulars of the service may be obtained from Roxburgh House, 281, Regent Street, W.

English Roses in Paris.—In a letter to our French contemporary, *L'Horticulture Francaise*, M. Albert Maumené writes lamenting the extent to which foreign flowers are imported into France and sold in Paris, to the disadvantage of French growers. *Inter alia*, he states: "Already, the Paris florists are offering Roses and Lilac from Aalsmeer; Roses of a still better quality, more durable and with a better appearance, are arriving from English hothouses; although having to be bought at the unfavourable rate existing between the florin and the franc, and the pound and the franc, respectively." M. Maumené draws from all this the moral that French growers are not sufficiently alive to their own interests, and he urges them to produce sufficient flowers for their own markets, instead of letting the foreigner in to take the best of the trade; but, incidentally, it is pleasant to have his unbiassed opinion of the English Roses exported to the Paris markets.

Small Holdings in Germany.—The local authorities in Berlin are considering the purchase of a large estate known as Damsdorf, about fifty kilometres from the city, for the formation of small holdings. Several large farms and some smaller ones will be established, and also sixty market gardens for the cultivation of hardy plants and other subjects. The smaller gardens will be handed over to the cultivators with forcing houses and heating apparatus all complete, the large ones with a part of their area ready planted with Asparagus. Oberbürgermeister Böss, who is an expert in the preparation and organisation of these state holdings, is planning to have a ring of them all round the outer margin of the capital, and the success of those already established is encouraging the local authorities to proceed apace with their plans.

Legacies to Gardeners.—The late Mr. H. C. Tower, of Eton Cottage, Staines, who died on November 14, 1928, left £50 to his gardener, Mr. George Parsons.—The late Col. Charles J. Goer, of Ashby Road, Winshill, Derbyshire, who died on November 30, last, left £100 to his gardener, Mr. William Harold Coltman, V.C.—The late Mr. James Nicholson Stuart, of Broomhall, Harrow, Middlesex, who died on December 20, 1928, left £250 to his gardener Mr. Arthur John Fuller, and £5 for each year of service from January, 1923.—The late Mr. Arthur William Page, J.P., of Rockstead, Bournemouth, who died on November 28 of last year, left £500 to his gardener.

Mr. F. L. Engledow.—We learn that Mr. F. L. Engledow, of St. Johns, Cambridge University, reference to whose work in connection with plant breeding is made in our leading article of this issue, has been appointed a member of the Council of the National Institute of Agricultural Botany until February, 1931.

Kew versus Wisley.—On Saturday, January 26, a football match took place between teams representing the Royal Botanic Gardens, Kew, and the R.H.S. Gardens, Wisley. Playing on the ground of the latter, Kew started with a strong wind in their favour, and scored first, but Wisley replied, and at half-time the score was one all—Kew were unfortunate in losing a man through an injured ankle. In the second half Wisley played with the wind, and although attacking most of the time, were unable to score again, thanks, chiefly, to the excellence of the opposing goalie. Kew, however, added two more goals, and the game thus ended with three goals to one in their favour. The game was played keenly throughout, and will, it is hoped, be the first of many such encounters between the two Gardens. The match was followed by tea, at which the Kew captain expressed his appreciation of Wisley's sport and hospitality, and the desire of his team to return the compliment at Kew. Mr. J. Reid replied for the home team. Messrs. Stedman, Arnold (captain), Bate, Hildyard, Hewitson, Bond, Boyce, Bilstrom, MacGregor, Slinger and Davis played for Kew; and Messrs. Ockamore, Hardwick, Mulligan, Green, Fletcher, Wood, Lawrence, Peters, Reid (captain), Phillips and Horton formed the Wisley team.

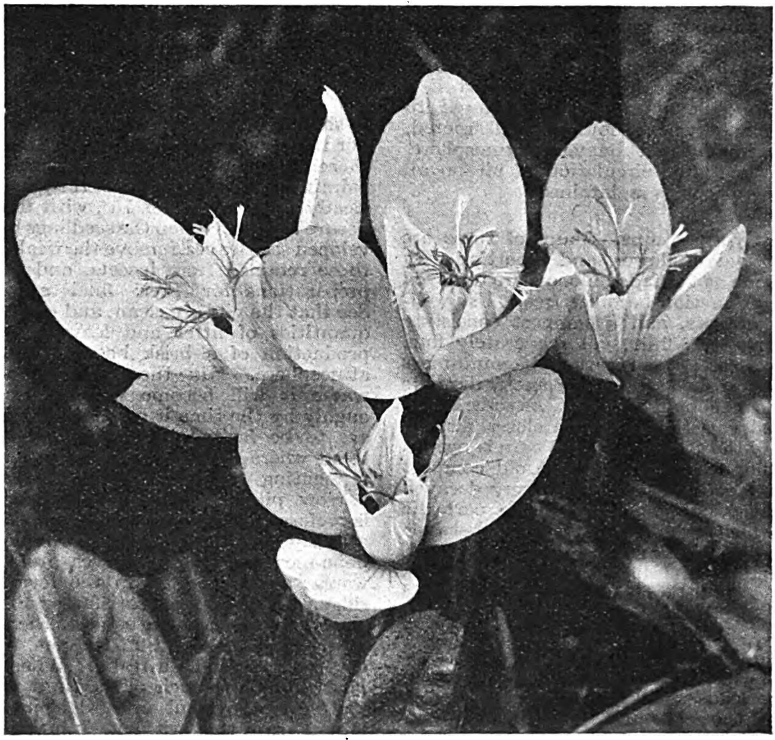


FIG. 58.—CROCUS IRIDIFLORUS.
(see p. 116).

Appointments for the Ensuing Week.—Monday, February 18: East Anglian Institute of Agriculture lecture; British Industries Fair. Tuesday, February 19: Winchester Horticultural Society's meeting. Wednesday, February 20: Wimbledon and District Gardeners' Mutual Improvement Society's meeting. Thursday, February 21: Ipswich Gardeners' Association's meeting. Friday, February 22: Sundridge and Braster Society's meeting. Saturday February 23: Leeds Paxton Society's Bulb Show.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Royal Botanic Garden, Dublin.*—We learn from the Curator's last annual report that there is now every prospect of this garden possessing a proper house to grow and flower the Victoria Regia and other tropical aquatic plants in, and also a museum of economic botany. An iron house, which was erected for a temporary purpose on the ground now occupied by the building of the great Industrial Exhibition, has been converted into a museum building, and now occupies a suitable position in the garden. It is certainly not the most appropriate structure for this purpose, but it will suit well as a commencement; and "I have," says Mr. Moore, "little doubt that so soon as the Government and the public see the importance of this department, sufficient means will be provided to make it as creditable as the museums attached to the Botanic Gardens at Kew and Edinburgh, which have been constituted at the public expense." Some of the glazed cases to hold the various articles are in course of construction, and a very considerable collection is already in store to furnish them, consisting of vegetable fibres, barks, gums, oils, etc., used in medicine, the arts, and manufactures, besides various preparations of vegetable products used as food, and fine sections of woods, etc., all of which have been purchased from the British Guiana Department of the Industrial Exhibition. Considerable donations have also been made from other departments in the exhibition. The proceeds of a garden fête, at which nearly 4,000 people attended, have enabled the Committee of Botany to undertake the erection of a fine stove aquarium house, which is now progressing satisfactorily, and will be ready for the reception of plants early next spring. *Gard. Chron., February* 18, 1854.

Publications Received.—*The Problems of Applied Entomology*, by Robert A. Wardle, M.Sc., pp. 587; The Manchester University Press; price 30/- net.—*Irises*, by F. F. Rockwell, pp. 84; The Macmillan Company, New York and London; price 4/6 net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Autumn- and Winter-flowering Cypripediums.—These are very popular and are being grown in large quantities for the production of cut flowers and for general decorative work, while the production of many fine and improved forms by various raisers has made them of general interest to the connoisseur. The lasting qualities of the blooms, both on the plant and when cut and placed in water, are well-known, while they are not easily damaged by fogs, a great asset when the collections are grown in smoky districts. Numerous varieties are now available at moderate prices, and these include many fine, long-stemmed and highly-coloured forms, all of which will thrive in the intermediate house in a position where moist conditions may be afforded throughout the whole year. If a minimum temperature of 55° can be maintained, only sufficient shading is necessary to prevent the sun from scorching the foliage, for flowers of fine quality are produced if a reasonable amount of sunlight is allowed to reach the plants when they are well rooted, provided a humid and buoyant atmosphere, kept sweet by a free circulation of air on all favourable occasions, is maintained.

Repotting Cypripediums.—Many of these are now passing out of flower, and repotting may be done so soon as the faded blooms are removed and before root-action becomes free. Use well-drained, clean pots, and a compost consisting of equal parts A.1. fibre, cut moderately fine, and fibrous loam; one part Sphagnum-moss and plenty of crushed crocks; in smoky districts a little less loam should be used. As some of the strong-leaved varieties are much closer growers than those of the C. insigne type, care is needed when dividing the growths. The old compost should be removed with care and any decayed roots cut away before attempting to part the rhizomes, which should be separated between the second and third growths from the lead, so as to induce the back growths to break more readily. A little powdered charcoal should be dusted on the severed parts to prevent rhizome rot. If large specimens are desired—Cypripedium flowers are seen to their best advantage when displayed in this way—some of the leads should be arranged towards the centre of the receptacle, keeping the base of the plant just below the pot rim, and working in the potting material—which should be warmed previously—carefully and firmly among the roots. In districts where the water tends to make the loam sour on the surface, a little extra fibre and moss may be used as a finishing layer, and a few crushed crocks sprinkled over the surface will help to keep it sweet. If the soil is moistened through after repotting, only small quantities of water will be required at fairly long intervals until new roots are moving freely, although sufficient is necessary to keep the old roots from shrivelling; the quantity of water required will depend on the amount of fire-heat employed to maintain the required temperature. Humid surroundings should be maintained by damping the paths and lower stages, also by occasionally syringing between the pots during favourable weather. When well established, the plants require ample supplies of water at the roots each time the compost appears dry, although constant saturation should be avoided.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Spring Cucumbers.—Where winter plants have failed, or are not grown, an early start with stout, young Cucumber plants is of great importance. Cucumbers delight in a compost of rich turfy loam, a little leaf-mould and rough lime-rubble. Good drainage is essential, as the plants will require an abundance of water, while they will need a bottom-heat of about 80°. They do well in pots plunged in a bed if room is scarce, but, other conditions being satisfactory, the best and largest returns are obtained from specimens planted out in ridges of good compost, somewhat heavier than that recommended for use through the winter. No manure should be used in the compost, as this only encourages worms, and does not maintain such steady growth as may be secured from good compost, augmented by applications of warm, diluted soot and guano water. Sow the seeds in the same way as recommended in my notes for January 5. A very important point in the management of spring-sown Cucumber plants is the placing of them in their fruiting quarters before they become pot-bound, as root-bound seedlings are of little use; they should be planted out so soon as the rough leaves appear, provided, of course, the soil is warmed through for their reception.

Melons.—Very early Melons, which are in pots, should receive a steady night temperature of 70° to 75° on mild nights at this season of the year, and it will be advisable to augment the bottom-heat with more litter and leaves, the warmth from these being more genial than that from hot-water pipes alone. More seeds should be sown if efficiently heated pits are available. For this purpose good early varieties should be chosen, and the seeds should be sown singly or in pairs in small pots or cubes of turf, and placed in a steady bottom-heat of 75°, with the fullest exposure to light. When the seedlings have fully developed seed leaves, remove the weakest; protect those retained from insects, and push forward preparations for their final accommodation. See that the pits are clean, and prepare sufficient quantities of litter and leaves for aiding the production of a brisk bottom-heat and moist atmosphere. Mix the compost and place it where it will become warmed through thoroughly by the time it is required. If the plants are to be fruited in twelve-inch pots, plunge them where they are to remain, and place the fermenting material around them. Where narrow pits are at command and planting-out is preferred, the same type of compost, consisting of fairly heavy loam, old lime-rubble and a little bone-meal, placed on turves grass-side downwards, and raised up in the form of a sharp ridge, should prove satisfactory; but unless the hot-water pipes are equal to the maintenance of a bottom-heat of 80°, the pot plants will be the first to ripen their fruits. When established, place a stick to each plant, tie it to the trellis, and train the plant upwards, pinching out all lateral growths without injuring the main leaves, but defer stopping the plants until two-thirds of the wires are covered. Keep a stock of warm compost at hand, and apply it frequently in small quantities as the roots appear on the surface of the soil; it should be rammed firm. The night temperature for these should be 66° to 70°, and the day temperature, 75° to 80°, allowing a rise of 10° from sun-heat. Maintain a moist, growing atmosphere by frequent sprinklings of water, but avoid wetting the foliage except on bright days, until the plants commence to cover the trellis.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Planting Trees and Shrubs.—As better weather conditions prevail, every endeavour should be made to complete the planting of deciduous trees and shrubs before the end of the month, if this work has not already been finished. By so doing, there will be less risk of loss from drying winds in spring. When selecting subjects for planting, consideration should be given to trees and shrubs that flower late in the summer, while those that have richly-tinted foliage in autumn, or brightly-coloured stems in winter, should also be taken into account. These points should be kept in view by those responsible for planting, so that the interest of the garden may be increased during autumn and the dull, short days of winter. Shrubs which take on brilliant colouring during the autumn include Cornus Kousa, Cercidiphyllum japonicum, Euonymus alatus, E. yedoensis, E. europaeus, Pyrus floribunda, Amelanchier canadensis, Acers in variety, and all forms of Enkianthus. Berberis vulgaris, B. Thunbergii, B. yunnanensis, B. Jamesiana, B. Wilsonae, and many of the new Berberis hybrids, if included, will brighten up the garden in the autumn. Where peaty soil is available, Vaccinium corymbosum, V. pennsylvanicum, Pieris Mariana and numerous varieties of Azaleas will be found of great value for autumn effect. Trees that have brightly-coloured foliage in autumn should be planted freely where sufficient space is available, and should include Quercus coccinea, Oxydendrum arboreum, Taxodium distichum, which should be planted near the water, and Liquidamber styraciflua, which requires a similar position. Parrotia persica, more often seen as a bush than a tree, has bright crimson and gold autumn foliage, while many of the Prunuses and Pyruses are as valuable for their autumn colouring as for their spring flowers. Crataegus Crus-gallii, C. prunifolia, and many others belonging to the Crus-gallii group of Thorns, give great satisfaction where autumn colour is appreciated.

Trees and Shrubs with Coloured Stems. Shrubs with brightly-coloured stems for winter effect have been sadly neglected by planters in the past, yet there are many suitable for producing a bright and pleasing effect if judicious grouping of the various subjects is practised. For positions near the water's edge, none are more valuable than the numerous Willows and some of the Cornuses, but to secure the best effects with these they should be cut hard back early each spring to induce them to make plenty of young, vigorous shoots, as their bark loses its bright colouring after the first year. A few of the best of the Willows include Salix vitellina, S. coccinea, S. pruinosa and S. daphnoides, while Cornus alba atrosanguinea is one of the most striking of the red-barked Dog-woods. C. stolonifera var. flaviramea is as equally effective with its yellow-coloured bark. Such varieties of Berberis as B. yunnanensis, B. Jamesiana, B. dictyophylla and B. virescens, add colour to the garden during winter with their coloured stems, as well as in summer and autumn. Among species of Rubus, many of the white-stemmed forms are effective for grouping, R. biflorus and R. b. var. quinqueflorus being two of the best. There are numerous shrubs whose young shoots are an attractive green or brown during winter, which should be planted if room permits; these include Forsythias, Lycesteria, Kerrias, etc. Of trees with coloured trunks and stems, none is more valuable than the Birch, and our native species is probably still the best. Others that are worthy of a place to provide variety are B. papyrifera, B. lutea, B. Ermanii, B. occidentalis and B. nigra.

HARDY FRUIT GARDEN.

By Henry H. Cook, Lecturer in Horticulture, Reading University.

Cherry and Plum Blossom Wilt and "Wither Tip."—This disease is becoming a very serious danger in many private gardens and orchards. As the spores are carried over on the dead young wood of the previous year, it is imperative that every particle of these infected shoots should be cut away well below the diseased portion, and the trees sprayed with lime-sulphur at winter strength, *i.e.*, one in twenty. This disease attacks both the Sweet and the sour Cherries, and most Plums, particularly the varieties Victoria, Belle de Louvain and Pond's Seedling. Infection spreads, as with Apple blossom wilt, through the open flowers, to the leaves, and eventually to the growing shoots. The disease is considerably more virulent in dull, cold seasons when the trees are in bloom, and but a few bees are about to assist in pollenation. The foregoing treatment will also help considerably in the eradication of Cherry fruit scab (Fusicladium cerasi), which forms dark blotches on the ripening fruits. These blotches vary in size and number, rendering the fruits unfit for use.

Orchard Trees.—There are many old orchards throughout the country which were planted with mixed fruit trees many years ago as an adjunct to the garden or homestead, and are now in a more or less neglected condition. There are many inexpensive remedial measures which may be applied during the dormant season which would rectify this state of affairs. The most important is to see that the drainage is good, and, if not, to remedy it, as there is nothing so conducive to canker and other diseases of fruit trees than a badly drained soil. The next is to ascertain which of the trees are still bearing useful crops of fruits, and which may be improved by careful thinning of the branches, a good cleansing wash, and the application of suitable manures. There will be others which, although healthy, may be bearing inferior fruits, and these are best headed back to convenient points to be top-grafted later in the spring. Then there may be a number beyond all hope of recovery; these should be destroyed. Where these veterans are to be replaced by young trees, it is essential that the station for each new tree should be prepared thoroughly. The old soil should be replaced by fresh material to which lime, rubble and chalk have been added, according to the texture of the soil. The top-soil, to the depth of a foot and a surface area of six square feet, should be removed, and the subsoil broken up thoroughly to the depth of another foot to ensure drainage. There is always a grave danger, especially in retentive clay soils, that these stations may become basins in which water will collect. The only remedy in such cases is to run tile drains from these basins to the nearest ditch.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hatfield, Hertfordshire.

Asparagus.—Asparagus plumosus, A. Sprengerii, and other sorts, are invaluable for decorative purposes, either in the cut state or as specimen plants. A Sprengerii and A. decumbens are invaluable when grown in hanging baskets suspended from the roof, but under these conditions need to be soaked periodically in a tub of water. All the species may be raised from seeds, which should be sown in a warm house; if the seeds are soaked in warm water for twelve hours prior to sowing them, their germination may be hastened. The seed pots should be plunged in a warm case provided with plenty of heat; if new receptacles are used they should be soaked for a short time before sowing the seeds. So soon as the seedlings are large enough to handle they should be pricked off singly into small pots, and when of suitable size should be transferred to larger receptacles or baskets, according to requirements. Here, A. plumosus and its varieties are planted out in small borders against the back walls of a warm pit and vineries, and in such positions it grows luxuriantly and produces sprays in quantity for cutting purposes. All the species are free-rooting and delight in ample supplies of water, with liberal feeding at the roots.

Trachelium caeruleum.—This subject is very suitable for growing in pots, as it may be had in flower over a long period by raising a succession of plants from seeds. Plants from seeds which were sown last autumn should now be ready for potting on into forty-eight-sized pots. T. caeruleum requires no special compost, provided the plants receive some assistance from liquid manure when they have filled their receptacles with roots. If seeds are sown now, and the seedlings grown on into forty-eight-sized pots, they should make useful specimens for furnishing the plant stages of the conservatory during the autumn. To obtain larger specimens, plants which were cut down last year should be grown on into eight- or ten-inch pots.

Coleus thyrsoideus.—Specimens of this subject which have passed out of flower should be cut hard back with a view to obtaining good, stout cuttings for propagating purposes at a later date. C. thyrsoideus may also be raised easily from seeds. From seeds sown now in a light, sandy compost, good flowering specimens may be obtained for next winter's display; the seeds should be lightly covered with fine soil and placed in a temperature of 60° to 65°.

General Remarks.—Late-flowering Chrysanthemums may now receive attention with regard to propagating. Select basal growths about three inches in length, and insert them in an open compost. At this season of the year they should root quickly if placed in a close case in a cool house. Continue the propagation of Carnations to produce plants in succession to the earlier-rooted ones. If the early rooted plants have filled their receptacles with roots, they should be potted on.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER, Knowle Gardens, Dunster, Somerset.

Autumn-sown Onions.—The ground in which these have to be planted may be forked lightly and the surface raked to a fine tilth. It should be trodden firmly and levelled, after which the plants may be put out, six to eight inches apart, in lines fifteen to eighteen inches apart. Extra large and strong seedlings should be discarded, as these invariably "run to seed."

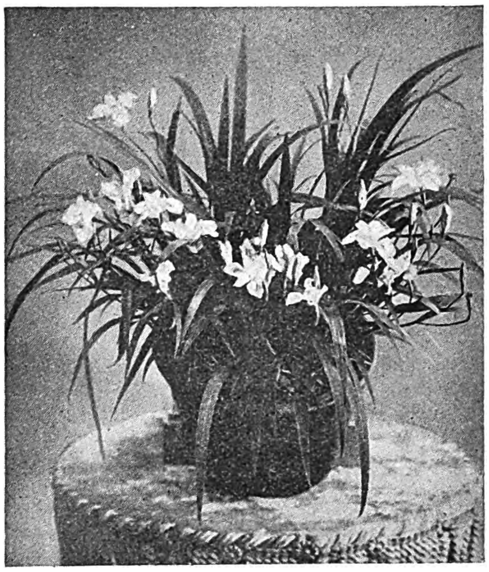


FIG. 59.—IRIS GRACILIPES.
(see p. 116).

Cabbages.—To provide a succession to the established beds, another batch of autumn-sown Cabbages may be planted now. The ground in which they are to be placed should be forked lightly, after which the lines should be marked with drills made with a draw hoe; for the stronger-growing varieties a distance of eighteen to twenty inches should be allowed between the lines, and for smaller varieties, sixteen inches. Select the best plants from the seed-beds so that they will all be a uniform size when in growth. Should slugs be troublesome, a sprinkling of slaked lime or spent carbide placed around the necks of the plants, should keep them in check.

Shallots.—These may now be planted in drills one foot apart and two-and-a-half inches deep, pressing the bulbs in the shallow furrows at intervals of eight inches to nine inches. When planted, the soil between the lines should be worked with the Dutch hoe a certain amount of soil will close around the Shallots and so keep them firm. Birds may prove troublesome when the bulbs commence growth, and a watch should be kept that none becomes displaced.

French Beans.—Dwarf Beans in pots will now require some support. For this purpose thin twigs of Birch are suitable, or four stakes may be used and connected with raffia. Never allow the plants to fall over. Syringe them overhead at least once each day, and on bright days admit plenty of fresh air, especially when the plants are coming into flower. Never allow the plants to suffer from lack of water. When the pods are about one inch long, give applications of liquid manure once each week.

Parsnips.—The ground in which Parsnips are to be grown should be dug deeply or, if possible, trenched, breaking up the subsoil with a fork. The deeper the soil is dug, the better, but, if exhibition specimens are required, they are best grown in holes bored with a crowbar as deeply as possible, and filled with finely sifted soil. The holes should be filled carefully, care being taken to leave no pockets, as these will cause the Parsnip roots to twist and so ruin them from an exhibition point of view. Provided the ground is in suitable condition, the seeds may be sown any time during February, sowing three or four seeds in each hole, the resultant seedlings being thinned to one—the strongest. Applications of liquid manure should be given occasionally to encourage the development of large roots.

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq., Rosemount, Monkton, Ayrshire.

Sweet Peas.—If seeds of Sweet Peas were not sown in the autumn, they should now be sown in pots or boxes. I prefer sowing Sweet Peas in ordinary seed-boxes and potting the seedlings singly, or mossing them, after the seedlings have been stopped and have broken into growth again. The seeds may, of course, be sown in the open ground where they are to flower, but few follow this method now-a-days, and it is not to be recommended.

Dahlias.—The stock tubers of these should now be placed in a good brisk heat to start them into growth if a large supply of cuttings is required, but where a large number of plants is not required, the tubers may be started slowly, divided into the required number of plants, and potted up.

Planting Bulbs, etc.—Ranunculi, Gladioli of the Colvillii type, and Anemones for late flowering, may now be planted if the soil is in a favourable condition. On heavy land the bulbs or corms, as the case may be, should have a little sharp sand placed around them, or they may rot should a protracted spell of cold, wet weather be experienced.

Malmaison Carnations.—Established specimens of these will now be showing signs of growth, and should be staked and have all dead leaves removed. A dressing of Carnation fertiliser, or a small quantity of rich soil, should be given, but on no account should the neck of a plant be buried deeply. Water them with care at all times as they prefer a moderately dry root condition, and keep them in a cool house, well exposed to light, but shaded during the hottest part of the day, in warm, sunny weather.

Potting.—Many subjects will now require attention with regard to potting. Zonal and Show Pelargoniums from cuttings rooted last autumn, will now require more root-room, and should therefore be repotted into larger receptacles. A compost of three parts good loam and one of old manure, with a little lime-rubble and sand added, should suit them well for the final shift into their flowering pots, but for earlier pottings a lighter mixture, with a little leaf-soil added, should be used.

ORCHID NOTES AND GLEANINGS.

EPIDENDRUM VITELLINUM.

Both the summer- and autumn-flowering varieties of this brightly-coloured Mexican Orchid thrive under similar conditions to those afforded Cymbidiums. When in active growth they revel in sun-heat, with plenty of fresh air and moist conditions, but after growth is complete and flowering has finished, very little water is required at the roots until growth is again active; while resting they require just sufficient moisture to keep them in a sound condition, without exciting them into growth too soon.

Specimens that have been resting under cool conditions should be examined frequently, and directly the new roots are noticed developing from the base of the last made pseudo-bulb, any plants that require fresh rooting material should receive attention, as if repotted at this stage there is less danger of injuring the fleshy roots than there is at a later date when growth is more advanced. After repotting, water should be afforded sparingly at fairly long intervals, especially if the house in which they are growing is kept moist. When roots and growth are well advanced, copious supplies of water will be needed each time the compost becomes fairly dry, which will be governed by the amount of sunshine that reaches the plants. E. vitellinum should not be shaded heavily at any time, a light blind being sufficient in the hottest weather, provided abundance of air is admitted.

When repotting specimens, well-drained receptacles should be used, while the compost should consist of Osmunda or coarse Al fibre, used in a fairly rough state, a little fresh Sphagnum-moss and broken charcoal. Firm potting is essential so that the water may drain away quickly; if the compost is left in a loose state around the roots, it will absorb water like a sponge and retain it a long time, so that the compost soon becomes sour. A small white scale often attacks plants of E. vitellinum, damaging them especially around the growing points, and they should be removed so soon as detected. *W. G.*

INDOOR PLANTS.

IRIS GRACILIPES.

Although by no means difficult to grow in the open garden, in a selected position on the rock garden, or in a warm border, Iris gracilipes is undoubtedly seen at its best when grown as a pot plant (Fig. 59) in a cold greenhouse or alpine house.

For this purpose it should be potted or placed in pans during the summer, while it is in active growth—at which period it is safe to divide the rhizomatous growths—in an open compost of loam, leaf-mould (only very little), and sand. The plants should be placed in a cold frame to become established, and grown on naturally, no attempt being made to force them into flower with the aid of artificial heat.

Iris gracilipes, from Japan, is one of the most dainty of Irises in cultivation. It forms a dense tuft of grass-like leaves, up to one foot in length and one-third-of-an-inch wide, and from among these are produced, on wiry, slender stems eight inches or more long, the delicately fringed flowers; no description fits these blooms more aptly than that employed by the late Reginald Farrer, in his *English Rock Garden*, who wrote eloquently of them as "wide-winged, delicate butterflies in the tenderest crumpled silk of pale-blue, with beard and enrichments of gold, and a pale veined eye."

I. gracilipes is now in commerce in this country, so there is no reason why all who are lovers of beautiful and daintily-flowered plants should not attempt its culture, if not as a pot plant, then in the open garden. The illustration on p. 115 represents a plant grown by Mr. A. Unger, at Heidelberg. *F.*

ALPINE GARDEN.

OXALIS TETRAPHYLLA.

One of the Oxalises, or wood Sorrels, which is classed as hardy, although it is not absolutely so in all parts of this country, is Oxalis tetraphylla, of which O. Deppei is probably only a variety. It comes from Mexico, the native land of several of the host of plants of this class. Its height is given as six inches, but it frequently exceeds this. The root-stock, called by gardeners the "bulb," is top-shaped, and the leaves, which are of fair size, are composed of four leaflets. The flowers are quite handsome, and the colour description of "lurid red," or "lilac-purple" hardly does them justice.

Like the majority of these exotic Oxalises, O. tetraphylla requires a light soil and a sunny position; in a sunny moraine it thrives well. O. tetraphylla is offered by some nurseries, and may be found in their catalogues under the name of O. tetraphylla or O. Deppei. It may be planted in spring or autumn, the former preferably, but if autumn-planting is followed, the plant should be covered with some litter or ashes during the first winter at least. *S. Arnott.*

LINARIA ORIGANIFOLIA.

Opinions are divided as to the merits of this subject as a garden plant; some affirm that it is desirable and well worth its place in the alpine garden or on the rock wall; others state that, owing chiefly to its lack of brilliance in colouring, it is not worth growing.

Personally, I am of the former group, for I consider that, if given a suitable situation, and provided the summer is at all favourable to the production of flowers, L. origanifolia is well worth its place, for although admittedly lacking in clearness and brightness of colouring, this deficiency is amply compensated by the freedom with which the blooms are produced.

In the first instance, L. origanifolia is a sun-lover; it cannot be expected to give of its best unless planted in a sunny, and comparatively dry position—the ideal is a warm crevice on a sunny cliff or rock bed. It is a perennial, but seldom long-lived, in fact, it is best treated as an annual, for it usually flowers with such abandon that its vitality is sapped and it invariably dies during the winter. However, it provides an abundance of seeds, and self-sown seedlings appear in plenty. These may either be left to grow where they have arisen, or may be transplanted carefully to suit able positions.

L. origanifolia is a native of southern Europe. It forms a bushy plant of rather weakly growths, six or eight inches long, clothed with small, oblong or obovate, short-stalked leaves, tinted to a greater or lesser degree with purple, according to the position and the weather conditions prevailing; the lower leaves are oppositely, and the upper alternately, disposed on the growths. From mid-summer onwards, until well into the autumn, these growths are terminated with loose racemes of small, purplish-violet flowers, of varying depth of colour and sometimes very pale, with yellow throats. As previously stated, they are not by any means brilliant, but when the plants are literally hidden beneath them, as they often are, they cannot fail to produce a most charming effect. If, by chance, a seedling with flowers of richer colouring is obtained, with care it may be increased by cuttings, which should be wintered in a cold frame under fairly dry conditions.

ISOPYRUM THALICTROIDES.

In appearance not unlike a dwarf Thalictrum, Isopyrum thalictroides is a dainty and unimposing little subject for planting in cool, semi-shaded positions on the rock garden or near woodland paths, in a cool mixture of peat and loam, although it is not very particular in the matter of soil, and is quite easy to establish.

It is found naturally in the woodlands of central Europe and Switzerland, and is therefore quite hardy, being among the earliest of alpine plants to commence growth. A member of the Order Ranunculaceae, in early spring it forms compact little clumps, six or eight inches high, of dainty, Maidenhair Fern-like foliage, bright green and very charming, while during March the light, open sprays, about nine inches high, of pearly-white blossoms, are produced. When these are finished the plant is so unobtrusive that it seems to fade away and attracts no more attention until the following spring. It is a good perennial and may be increased quite readily by careful division, while seeds are sometimes offered by seedsmen and from these plants are easily raised.

Although laying no claim to being at all striking in appearance, I. thalictroides is of such dainty appearance that it might well be given a trial, especially as it produces its flowers so early in the year. *W.*

BULB GARDEN.

CROCUS IRIDIFLORUS.

Among the most distinct species of Crocus known to cultivation is C. iridiflorus (Fig. 58), whose fully expanded flowers, as its name suggests, resemble those of an Iris to a marked degree; it has been described by several authorities under the name C. byzantinus, and was, indeed, figured in the *Botanical Magazine*, t. 1,111, under this title; while, on account of its peculiarly shaped flowers, it was placed in a separate genus by Schur, and given the name Crociris iridiflora. However, it is now generally known as Crocus iridiflorus, certainly the most suitable name, for it is not Byzantine in its habitats, being found in Hungary and Transylvania, while it is certainly a Crocus, and therefore is entitled to its generic name as such.

The outer segments of the flowers are twice the length of the inner ones, being about two inches in length and one inch wide, and of rich purple colouring; the inner segments are much narrower and pointed, much paler than the outer, in some instances nearly white, and with purple veins. This Crocus is also distinct from the other species in that it has pale purple stigmata, which are divided into slender threads.

There are several grand varieties of this Crocus, including a pure white form which has pale yellow stigmata; and, among those raised by the late Mr. Allen, of Shepton Mallet, there are President, with large, deep purple blooms; Rosamund, pale lilac, and Ruby, reddish-purple.

Crocus iridiflorus is by no means difficult to grow, for it is of robust constitution, and, being a native of woodlands, delights in semi-shade and a compost containing plenty of peat and leaf-mould. *G. F.*

HARDY FLOWER BORDER.

HEUCHERAS.

Not many years have elapsed since the Heucheras, or, at least, the few that were then known, were regarded as only second class border plants, but recently they have received considerable attention from the florists, so that now we have a group of beautiful forms which rank among the finest of plants of medium stature for the front of the herbaceous border. Their foliage alone is sufficiently attractive to recommend them for cultivation and, whereas the species are often unsuccessful in some gardens, failing to remain of long duration no matter what conditions are afforded them, many of the striking hybrids, in themselves vast improvements on the types, have overcome this failing and are indeed first-class plants.

H. sanguinea is the best-known of the species and is, in itself, very attractive, but in the hands of the specialist it has given rise to variations, in a large range of colours, of even greater merit. The form Pluie de Feu, for instance, which has now been grown for some considerable time and was one of the first forms of H. sanguinea introduced, is one of the finest, although now not so easy to obtain; its foliage is very attractive, a trait associated with all the Heucheras, while the fiery-red, very striking flowers are produced with freedom. Edge Hall variety is well worth securing, its blooms being of a distinct shade of coral-pink; the variety splendens produces, in long succession, strong spikes of large, bright crimson flowers; while variety maxima is a bold flowering variety, its blooms being of a rich shade of coral-red. The so-called variety alba, whose greenish-white flowers change to pink, has been replaced by the form White Empress, while other varieties of outstanding garden value are Miss Jessop, with slender spikes of bright, rosy-crimson blooms, produced very freely; Walker's variety, one of the best, with spikes up to two-and-a-half feet tall, heavily laden with large, vivid crimson flowers, and Roi des Violets, with bold inflorescences of rich, ruby-crimson, the flowers becoming tinged with violet as they age.

H. Rosamundi, a hybrid between H. micrantha rosea and H. sanguinea, is still one of the best, its tall, branched stems, bearing rich, coral-pink flowers, being very useful for decorative purposes when cut. H. gracillima, also of hybrid origin, its parents being H. micrantha and H. sanguinea, is well worth growing, for it is of good constitution and free-flowering, producing graceful spikes of rosy-pink flowers.

H. Zabeliana might well be given a place where a collection of Heucheras is grown, for its wiry stems rise to about three feet, and carry bright flowers of a rosy-pink shade; while H. brizoides, when happy, flowers freely, its blooms being a delightful shade of pink.

There are several other very attractive Heucheras, but the foregoing provide a useful selection. They delight in warm and sunny positions, in good, rich, but not too heavy soil, while they should be divided frequently as, if left undisturbed for a number of years, they are liable to deteriorate. These Heucheras, in a warm season, produce an abundance of seeds, and if these are secured and sown, very interesting and attractive forms may often be obtained.

At one time the Heucheras were popular for furnishing the rock garden, and for such purposes, provided the rock garden is moderately large, they are quite suitable, while they are also very effective when grown in the crevices of heavily-built rock walls.

Finally, mention may be made of the charming little, early-flowering Heuchera tiarelloides, a bi-generic hybrid between Tiarella and Heuchera, with compact tufts of attractive evergreen foliage and erect spikes of rose-pink flowers. It is well worth a place on the rock garden. *M. W.*

VIOLA ARKWRIGHT'S RUBY.

In a most interesting account of Messrs. Clarence Elliott's nursery (*Gard. Chron.*, Vol. LXXXIV, p. 495), a reference occurs to Viola Arkwright's Ruby, and a remark is made to the effect that it is now scarce in nurseries. This is rather surprising, as it is an excellent grower, giving plenty of material for propagation. So far as its beauty is concerned, it is hardly possible to over-praise it. The colour is impossible to describe with accuracy, but the varietal title approaches its hues as nearly as possible. The flowers are large and extremely effective in borders or beds. The plant holds its flowers well upright and, while of the Pansy character of growth, without the tufted habit of the bedding Viola, it withstands the winter well, and in the second year from cuttings provides large plants, crowded with flowers. It was very fine indeed in my garden last year, the most of the plants being from cuttings of the autumn of 1926. Plenty of suitable cuttings are produced, and it is surprising that it is not more plentiful than it is. Arkwright's Ruby appears to do specially well in Scotland, and I saw plenty of it in a nursery last year. *S. Arnott.*

LINARIA TRIORNITHOPHORA.

When well-grown, this Toadflax is an extremely attractive plant, but it is seldom seen in gardens at the present day. A native of Spain and Portugal, it is really a perennial, but in this country is best treated as an annual, as it is very liable to perish during the winter, while it is never very long-lived. If seeds are sown, either in the open ground or under glass during early spring, the resultant plants should be well developed by mid-summer, and during July and August should produce an abundance of the quaint flowers which characterise this plant and which, besides being unique in appearance, are also richly coloured and quite striking.

L. triornithophora is of erect habit, its slender growths, rising to a height of one-and-a-half foot or more, being sparsely furnished with whorls of three or four ovate-lanceolate, acute, light green and glaucous leaves, and terminated by whorls of flowers, three in each, which are short-stalked and quaintly bird-like in appearance, hence the specific name—meaning, bearing three birds. They have long, tapering spurs, broadly inflated at the top, and vary in colour from pale violet to bright, rich purple, the lip being orange.

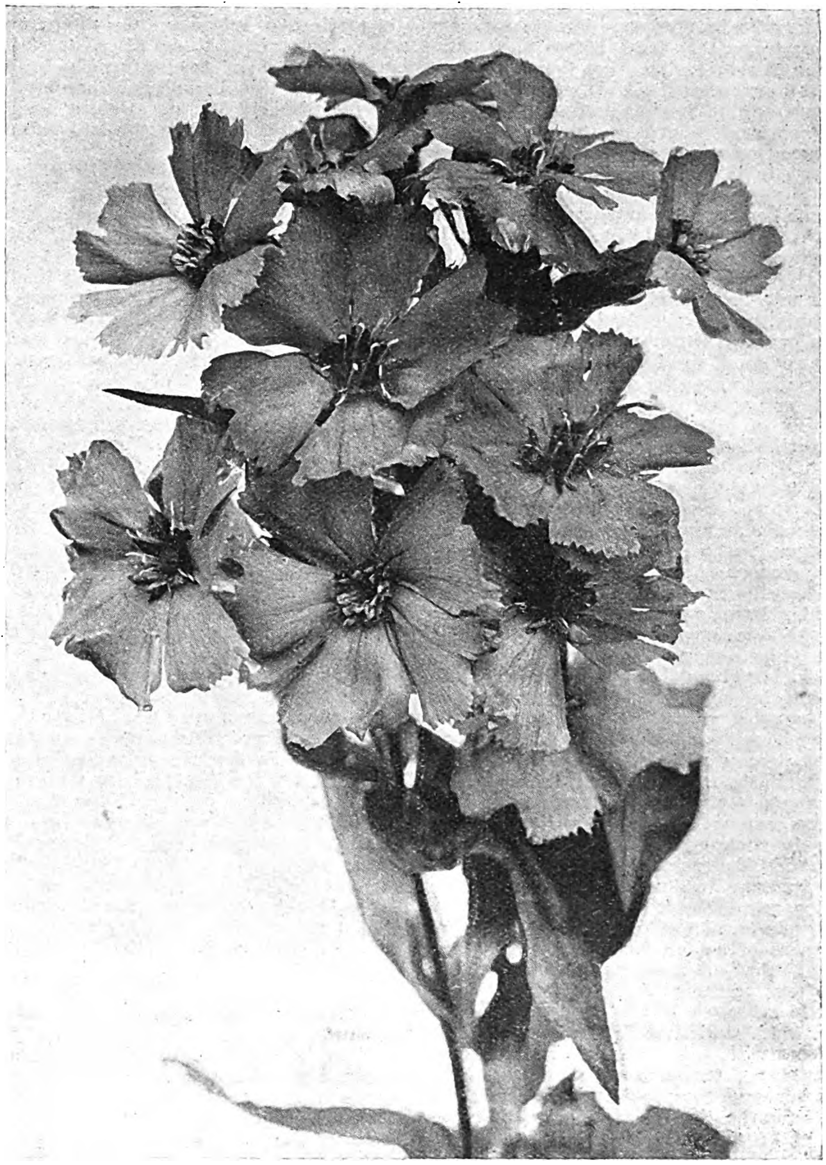


FIG. 60.—LYCHNIS HAAGEANA.

In Farrer's *English Rock Garden* the height of this Linaria is given as four or five inches; this may be true of it in the wild state, but under cultivation this height is usually trebled.

This Toadflax should be grown in a sunny, open position, and in soil which is light and not too rich, for, if grown in rich soil, it will grow luxuriantly, but will not flower with any pretence of freedom; under these latter conditions, indeed, it will present a worthless appearance, a fact responsible, no doubt, for its rareness in gardens. *M.*

LYCHNIS HAAGEANA.

Not many years have elapsed since the beautiful hybrid Lychnis Haageana, whose parents are stated to be L. fulgens and L. coronata, was an extremely popular plant in gardens, but nowadays it is seldom seen, while its many beautiful colour forms are still rarer.

This is to be lamented, as L. Haageana (Fig. 60) is one of the most striking members of its group and invaluable for producing a brilliant and continued display of blooms throughout the summer months. It is tuberous-rooted, hardy and perennial, although it is by no means long-lived, and should be raised periodically from seeds, which it produces freely; its many colour forms, in shades of crimson, scarlet, salmon, pink and white, have been fixed, and may therefore be raised from seeds, the seedlings producing flowers in the second year. The individual blooms of L. Haageana are large and of good substance, being about two inches across, the broadly obovate petals being deeply indented at the apex, and having a long, slender tooth on each side.

L. Haageana is rather particular in its requirements. It dislikes soil of a cold and heavy nature, preferring a light, but moderately rich, loamy medium, and a position not too fully exposed to the sun; in fact, it is advisable to plant the brilliantly-coloured forms in partially shaded positions, as their blossoms have a tendency to fade in colour if fully exposed to the glare of the summer sun. The greatest enemy of L. Haageana is the slug, which, if not watched for and destroyed, will eat the crowns of the tubers during the winter and so render them worthless. *F.*

FLOWER GARDEN.

SALVIAS.

THE genus Salvia contains some useful species and varieties for the embellishment of the flower garden during summer, either as occupants of beds or as groups in the mixed flower border. For the former purpose, varieties of Salvia splendens, with their bright red bracts, are the most sought after. During recent years a decided improvement has taken place in this group, and we now have some excellent forms that come into bloom during early summer and continue in good condition until cut down by frost. But there are still many forms of S. splendens offered which, from the point of view of bedding plants, are very unsatisfactory, as they only begin flowering in late autumn, and are destroyed by frost before they have contributed anything to the floral display. Such forms are more suitable as pot plants for conservatory decoration during the autumn and early winter.

There are also various varieties of S. splendens with so-called violet or purple bracts, but the majority of these are of little or no value for bedding purposes. The same applies to the variety known as S. s. aucubiaefolia, which, as its name denotes, has spotted leaves like those of an Aucuba; the seeds of this form were of Italian origin. It may be a good plant under the sunny skies of Italy, but it is certainly far from attractive when grown here.

To secure good specimens of S. splendens it is advisable to sow the seeds (if seeds are the means of propagation to be employed) in a temperature of 55°, during early February in the north, but in the south, three weeks later should be early enough. When large enough to handle, the seedlings should be potted singly into three-inch pots; pinch the growing points out when about four inches high to induce them to form bushy plants. Repot them into four- or six-inch pots before they become pot-bound, and grow them on as near the glass as possible, later gradually hardening them off in cold frames preparatory to planting. Stocks may be secured that come fairly true from seeds, but a good type is always worth perpetuating by cuttings, which root freely in autumn, or the young growths from stock plants may be secured in spring. These Salvias like a rich, loamy soil, and should be given a position in full sun, where the dazzling scarlet bracts may be seen to full advantage.

Foremost among the many varieties of S. splendens in commerce is Harbinger. This is a moderately dwarf-growing form, flowering with the greatest freedom. Seeds of this form sown last year on March 8, and planted out on June 19, were in bloom by July 16, and continued a mass of colour until cut down by frost in autumn. Fireball is of much the same habit, with, perhaps, rather brighter scarlet bracts, and a little taller.

Early Dwarf Bedder, of Continental origin, is a bushy sort with good spikes, and it is very free-flowering; the time for sowing seeds of this form, and the period of flowering, are the same as in the variety Harbinger. For the purposes of bedding, the three varieties mentioned above will be found reliable.

For bedding purposes few, if any, blue-flowered subjects can compare with the well-known S. patens when well-grown. This native of Mexico has tuberous roots, which should be stored in sand in a frost-proof house during winter, unless grown in districts where the soil in sandy and well-drained; in such places it will withstand the average winter in the open, with the help of a little protecting material, such as dry Bracken, during hard frosts. It is readily increased from seeds, or by cuttings of young growths in spring. From seeds sown on March 8 last year, good flowering plants were obtained by July 16.

Where a dwarf Salvia is required for edging purposes, S. Roemeriana will be found suitable, as this forms a compact little plant from six inches to nine inches high, with bright scarlet flowers.

S. Horminum, which is commonly known as Bluebeard, and is often employed as a bedding plant in northern gardens, is worthy of a place where purple colouring is required, but care should be exercised to secure seeds from a selected stock. S. farinacea is a most attractive species, the tall spikes of violet-blue flowers, borne on wiry stems covered with a white tomentum, imparting to it an elegant appearance. It is a native of Texas, and will come fairly true from seeds if a good stock is procured; there is a white form of it which is seldom grown.

S. fulgens, from the Mexican mountains, is usually regarded as a greenhouse shrub, but it makes a free-flowering bedding plant in the south. The long, bright scarlet flowers are extremely showy and are produced freely, while it will come through a mild winter in the open, producing young growths from the base in the same manner as do hardy Fuchsias. S. involucrata var. Bethellii has whorled spikes of rosy-crimson flowers. Growing from three to four feet high, it is of great value where large beds have to be furnished or for bold groups in the herbaceous border. A wonderful display by this Salvia was noted at Basing Park, Alton, in the late summer of last year.

Another useful species is S. coccinea, one of the brightest-flowered scarlet Salvias, for it produces blooms from June onwards. The corolla is about one inch long, and is deep scarlet, while the flower-spike gives the impression of being of a twiggy nature; the flowers are borne in clusters, a short distance apart, but the flower spikes are produced so freely that there is a constant display of blooms. S. leucantha is another attractive species for the border, for its small white flowers are borne on spikes densely covered with violet-lavender-coloured "wool"; the foliage is silvery underneath and gives a delightful effect. This species is increased easily from cuttings in autumn or spring, but to secure the full effect from this species in the open, it is imperative to have good plants at bedding-out time.

S. argentea is a biennial from the Mediterranean regions, with silvery foliage and pinkish-white flower-spikes which attain a height of from three to four feet. It is useful for planting in bold groups in the herbaceous border. Equally valuable for growing in large borders is S. dichroa, with long racemes of pale blue flowers and coloured bracts.

S. uliginosa is not hardy in every garden but is well worth a little protection during winter. This showy species attains a height of from five to six feet, and from the ends of the leading shoots, panicles, one foot long, of beautiful pale blue flowers are produced. Although tall-growing, it is wiry in growth, and only requires a few twiggy branches around it to provide the necessary support. This species, as well as S. farinacea, provides good material for cutting, the long flower-spikes lasting well in water. *F. W. G.*

ANTIRRHINUMS.

THE wonderful improvements made in these beautiful flowers during the last few years admirably fits them for all kinds of garden and greenhouse decoration. There is now a very extensive range of colours in all the three sections—tall, intermediate and dwarf—and most of the colours are now so well fixed that plants from seeds may safely be used in bedding schemes, both in public and private gardens.

The Antirrhinum is classed as a hardy perennial, but there is no doubt that if the plants are raised during the summer, with the intention of standing through the winter for use the following year, they are better for some protection in the event of severe weather. They are largely used now as annuals, and make a fine display in early autumn, but the best plants result from sowing seeds in the previous year, and wintering the plants in cold frames. These will flower much earlier, and the plants will be finer in every way. For cultivation as annuals, seeds should be sown in early February in well-drained pans, using a fairly light compost passed through a fine sieve. As the seeds are very small, dust the soil surface with silver sand prior to sowing the seeds, which may then be distributed more evenly. Lightly cover the seeds with some sandy soil, and press it down gently, then water them with a fine-rosed can. Place the pans in a temperature of 55° to 60°, and cover them with glass and brown paper to conserve the moisture. The seeds should germinate in a week or so, and so soon as the seedlings are up remove the covering, and place them on a shelf near the roof-glass. When water is required immerse the pans to the rims in tepid water until it has percolated through the soil.

As the seedlings gain strength they should be afforded a slightly cooler atmosphere, admitting air when possible, and so soon as they are large enough to handle, they may be pricked-out into boxes of good soil which has been passed through a quarter-inch-mesh sieve and made fairly firm. Place the young plants about two inches apart each way and water them in as each box is filled. Label each box correctly so that there is no confusion when planting out time arrives. The boxes of seedlings may be placed in a light, airy house with a temperature of about 50°, and water should only be applied when required. If there are plenty of frames at command, beds of good soil may be made up in these, and the young plants pricked out two or three inches apart, giving the surface a dusting of sand before starting. Water them in, and keep the frames closed for a day or two to give them a start. They will soon commence to grow, and air may then be admitted on all favourable occasions. The surface soil should be stirred between the plants occasionally, as this will greatly promote healthy growth. So soon as the plants are strong enough, the lights may be removed altogether in the daytime, so that the plants are fully hardened by planting-out time. This method entails much less labour in watering, etc., and the plants will be sturdier and transplant better. When planting, each plant should be lifted with a trowel with as much soil about the roots as possible, and if the weather is at all dry at the time, the plants should be watered in well.

Although Antirrhinums will grow in almost any soil, they will be much finer if given good treatment in this respect, and the beds or borders should therefore have been prepared well some time in advance. In good soil the flower spikes will be much larger, and the colours more pronounced, and they will also last longer in bloom, than if planted in poor soil. A foot or fifteen inches apart should be a sufficient distance at which to plant them, and they should be put in as firmly as possible. Rake the soil over between them when finished, and afterwards stir the surface with the Dutch hoe. Keep all faded flowers picked off, and the plants should continue to bloom until stopped by frost. The tall varieties will need staking to keep them upright, and when this is neatly done, they are most effective.

Antirrhinums required for early flowering should be sown in boxes or frames early in August, and pricked out into frames as advised for the spring-sown plants. There they may remain all the winter, with an occasional stirring of the surface soil between them to keep it fresh, and a dusting of soot now and then to keep slugs at bay. They should have as much air and light as possible, but should be covered with mats if severe weather prevails. These plants may, of course, be put out much earlier than the spring-sown ones, provided the ground is in suitable condition, and will take no harm from ordinary spring frosts.

The best varieties are also very useful for growing in pots, especially the variety Nelrose a beautiful, silvery-pink variety, and a strong grower. Seeds should be sown about mid-summer, the seedlings being potted on as occasion demands; if dwarf plants are required, they should be pinched back once before the winter arrives. They may be grown on into five-inch pots, wintered in a cool frame, and repotted into seven-inch pots early in the New Year, giving them a good, fairly rough compost of two parts rough turf, one part leaf-soil, and one part old, well-decayed manure, with a little coarse sand added. Grow them under quite cool conditions as the season advances, and if they have been allowed to grow naturally they will require staking, as they will reach a height of four or five feet if well grown.

To obtain fine flower spikes of Antirrhinums for exhibition, the plants should be thinned to three or four shoots, or even fewer, with some varieties and they should be mulched with decayed manure and well watered if the weather proves dry. Some of the more delicately coloured varieties will require shading from very hot sunshine, while the spikes should be staked if there is danger of them being broken by wind. I forbear to mention any varieties for outdoor culture, as the perusal of any good seedsman's list will furnish all the knowledge required. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

PLANTS NEW OR NOTEWORTHY.

ASTILBE KOREANA.

The genus Astilbe consists of about fourteen species, and these are scattered over the more temperate parts of China, Japan and India. The fine species under notice was found by Mr. E. H. Wilson when plant-collecting in Korea, and has been in cultivation here for a good many years, but for some reason has never become common.

I cannot remember ever seeing this plant exhibited in London. Astilbes are frequently shown, but are more often the many fine hybrid forms that Continental plantsmen have been so successful in raising. These hybrids, are, in fact, more showy, of richer colouring and greater vigour than some of the species. The influence of A. Davidii, which was also one of Wilson's many good finds when collecting in China for Messrs. James Veitch and Sons, is seen in these Continental varieties.

A. koreana is always a striking feature about late August or early September at the Edinburgh Botanic Gardens. Indeed, it is more often seen in Scotch gardens than in those of the south. The plant is of tall, stately habit, with immense plumes of white flowers which are sometimes tinged with pink. Seeds of this first-class border plant are now available—probably for the first time—and are offered by Messrs. Dobbie and Co., of Edinburgh. *T. Hay, Hyde Park.*

THE PASSION FLOWER.

Although Passiflora caerulea is not absolutely hardy, this South American climber will survive most winters if grown against a warm, south wall, especially if the rootstock is in a sheltered corner. Even if a considerable portion of the plant is killed by frost, its recovery on the advent of warm weather is so rapid that the new, strong growths soon cover the vacant space with handsome foliage. In favourable localities, flowering commences in July and continues until October.

Although not a showy climber, the flowers are curiously beautiful, and repay a close examination. The calyx and petals are of similar size, greenish white on the outside and tinted with blue and purple inside. The greatest attraction in the flowers lies in the rays of the so-called "corona," composed of peculiarly fine, thread-like growths, radiating from the centre, their colouring being a rich harmony of blue and purple contrasted with white; through this coronna rises a bold, purplish style.

Half-hardy climbers are usually sold in small pots, and it is a great advantage to purchase early, and pot them into pots of a larger size, to obtain a vigorous, healthy root-system, capable of promoting rapid growth; plant early in April. The Passion Flower will grow in any ordinary soil, but good drainage is a necessity. It does not cling naturally to the wall like Ivy, but is supported by its numerous tendrils, and a trellis or wires must be provided on which to train it. Pruning should be done in March, removing all dead wood, and thinning out the weaker growths.

Plants in this garden often produce yellow, egg-shaped fruits containing fertile seeds, from which plants have been raised, but the easiest method of increase is by means of short, axillary growths which root quickly in a warm frame, partially filled with sand.

Passiflora c. var. Constance Elliott is a white variety raised by Messrs. Lucombe Pince and Co., of Exeter, in 1884. It was very common as a greenhouse plant for a few years, but it has never attained the popularity of the older plant.

For many years we grew a purple variety and much doubt was expressed by several authorities as to its identification. Some time afterwards, the late Mr. W. Watson wrote to say that he believed it originated with Messrs. H. Cannell and Sons, and was named by them Eynsford Gem. Like many other good plants, it was lost during the war; should any reader possess a plant, I should be pleased to hear from him. Nicholson's *Dictionary of Gardening* lists three probable hybrids of P. caerulea, viz., P. c. Colvillei, P. c. kermesina and P. c. racemosa. Are these still in existence? *J. Comber, Nymans Gardens, Handcross.*

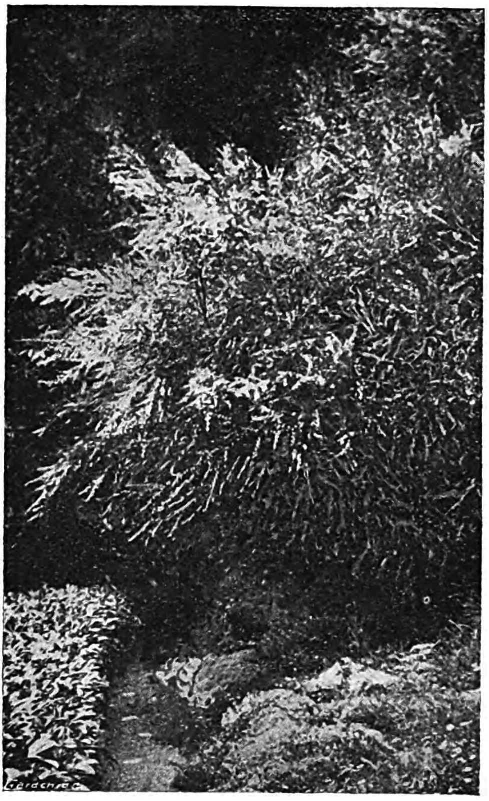


FIG. 61.—LEPTOSPERMUM SCOPARIUM AT AVOCA, CO. WICKLOW.

TREES AND SHRUBS.

SALIX DAPHNOIDES.

A native of central Europe, eastern France, Russia, Italy and Asia, this beautiful Willow is not planted so often as it deserves to be, for there are few kinds that can surpass it for beauty of flower or bark. Planted by the water-side, this shrub will attain a height of forty feet, and is an admirable subject for preserving intact the verge of a lake. It is one of the most attractive Willows in autumn and throughout the winter months, for the silky hairs protruding from the buds form a pleasing contrast with the purplish colour of the twigs and branches. The male is the most desirable form, producing its very large catkins on "bloom"-covered, somewhat viscous twigs in February or early March, long before the narrow, acuminate leaves make their appearance.

S. daphnoides var. acutifolia is similar to the type, but has narrower and more gradually acuminate leaves. S. daphnoides var. praecox has reddish-brown twigs, and is the earliest Willow to flower in this country, the male form producing its catkins, with large, golden-yellow anthers, usually about a week before the type.

The colouring of the bark being most vivid on the young growths, to obtain dwarf plants with long annual growths these Willows should be pruned so soon as the anthers have shed their pollen. Propagation is of the easiest, quite large branches rooting readily at this time of the year. *J. Blades, University Botanic Garden, Cambridge.*

LEPTOSPERMUM SCOPARIUM.

Leptospermum scoparium, the Ti Tree, which forms much of the scrub of New Zealand, and Australia, is a very beautiful evergreen shrub, with very small leaves and long, graceful sprays that are thickly studded with white flowers in June, the individual blooms being of the shape and size of small Strawberry flowers. In any fairly mild climate, given a sunny, sheltered position, in rather poor, light, well-drained soil, it will flourish and attain a height of eight feet to ten feet. It is increased easily by seeds, and the young plants begin to flower when about three years old. There are several very charming varieties of this shrub with blossoms of different shades of crimson and scarlet.

The accompanying illustration (Fig. 61) shows Leptospermum scoparium as it flowers every summer in my garden. *W. F. Wynne, Avoca, Co. Wicklow.*

VACCINIUM OVATUM.

A very handsome shrub from western North America, and quite capable of withstanding our severest winters, although the young growths may be slightly cut during severe frosts, Vaccinium ovatum forms an erect, evergreen bush, up to ten feet high, in this country. The young wood is purplish and rather downy, and the foliage takes on gorgeous autumn colouring in favoured situations. The leaves are about an inch long and half as wide, rounded or tapering, minutely toothed, of a very firm and leathery texture, and glossy green above and below. The flowers are produced in the autumn, six or more together in short, nodding racemes, in the leaf axils; they are fairly inconspicuous, and are followed by handsome fruits, which have an agreeable flavour when ripe, which is seldom in this country; they are glossy black and about one-third-of-an-inch in diameter.

V. ovatum was discovered by Menzies, and introduced by Douglas in 1826; there are very fine specimens of it growing in Lord Clinton's garden at Bicton, in Devonshire. *Will Ingwersen.*

LEUCOTHOË DAVISIAE.

Among the various shrubs to which the generic name of Andromeda still clings this is one of the most attractive. It is a native of the higher altitudes of the Californian Sierra Nevada, and was discovered by William Lobb, who introduced it for Messrs. Veitch in 1853. L. Davisiae is an evergreen shrub of dwarf, compact habit, averaging about two feet in height. The ovate-oblong leaves are rounded at the base, bluntly pointed, some two inches long, and half as much in width. This foliage is a rich, glossy green, and makes a telling setting for the pure white flowers. These latter appear about midsummer in clusters of racemes which rise from the tips of the shoots and terminal leaf axils. Each raceme being nearly four inches in length and the individual pitcher-shaped blooms one-quarter-of-an-inch long, a specimen of L. Davisiae in flower is singularly beautiful. Moreover, the tufty inflorescences well illustrated in Mr. W. J. Bean's *Trees and Shrubs Hardy in the British Isles,* show to full advantage since they rise well above the foliage.

L. Davisiae appears to be quite hardy, and it does very well with me in a light, woodland loam with partial shade. The latter is probably not essential where there is sufficient moisture, and if I remember aright, the good specimens of this species at Wisley get most of the sun. Propagation may be carried out by means of cuttings in August, but as L. Davisiae spreads by suckering it is often possible to secure rooted off-sets without disturbing the main plant. *N. Wales.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XIII.—The First Climb.

The trees mentioned in the last chapter were not the only ones identified in the Lohit valley. Altingia excelsa, a giant of a tree, was fairly common, and was found some distance up the Delei. It is deciduous, and is easily recognised by its globular, wooden heads of fruits, many of which remain long on the tree. Another massive species, to which attention was first drawn by its fallen branches, laden with fruits, was Cedrela Toona, but this was rather rare. Much more common than either of the above was a species of Talauma (T. Hodgsoni probably), an evergreen tree, bulky, but of no commanding height. I wanted to see this flower, but we departed before the big buds burst. Albizzia Julibrissin was flowering on boulder banks in the river bed, a form with pale yellow corollas, very slightly longer than the calyx, white stamens, and leaves softly pubescent beneath. It is one of the first trees to establish itself in such barren situations, and with it on the pebble bank, amid a wilderness of rank grass, were bushes of Elaeagnus, and several Leguminous shrubs. Higher up the Delei valley, Albizzia Julibrissin was much commoner, especially in villages where, if not actually planted among the crops as a shade tree, it was certainly preserved; but in the warmer and wetter climate of the Lohit, A. procera, not yet in flower, was more at home. Another Leguminous tree noticed was Pithecolobium bigeminum, which I found in bloom on April 3; indeed, woody Leguminosae, trees, shrubs and climbing plants, were abundant and varied, forming a feature of the forest vegetation; an Acacia flowered before we left, and a climbing Bauhinia did not.

Apart from trees and shrubs, the poverty of flowers was noticeable, herbaceous plants getting a poor show in any Indo-Malayan jungle. There were a certain number of Orchids, mostly epiphytic, but few of them were in flower.

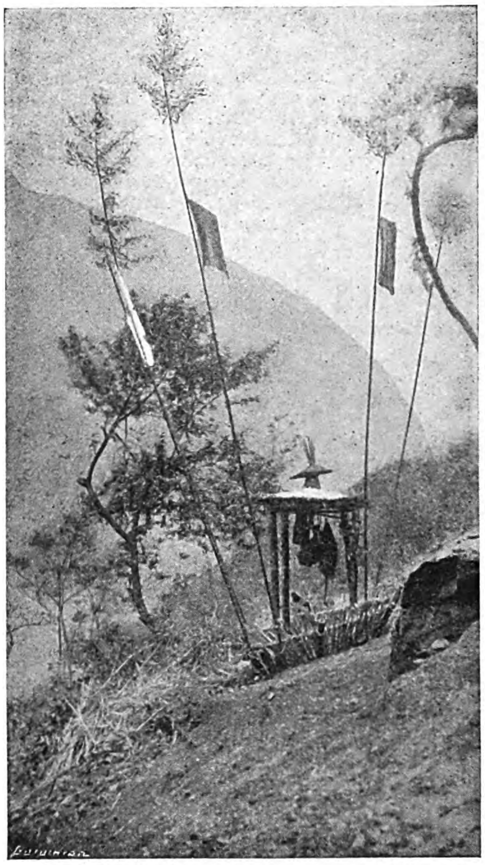
FIG. 62.—A SHRINE IN THE DELEI VALLEY, MISHMI HILLS.

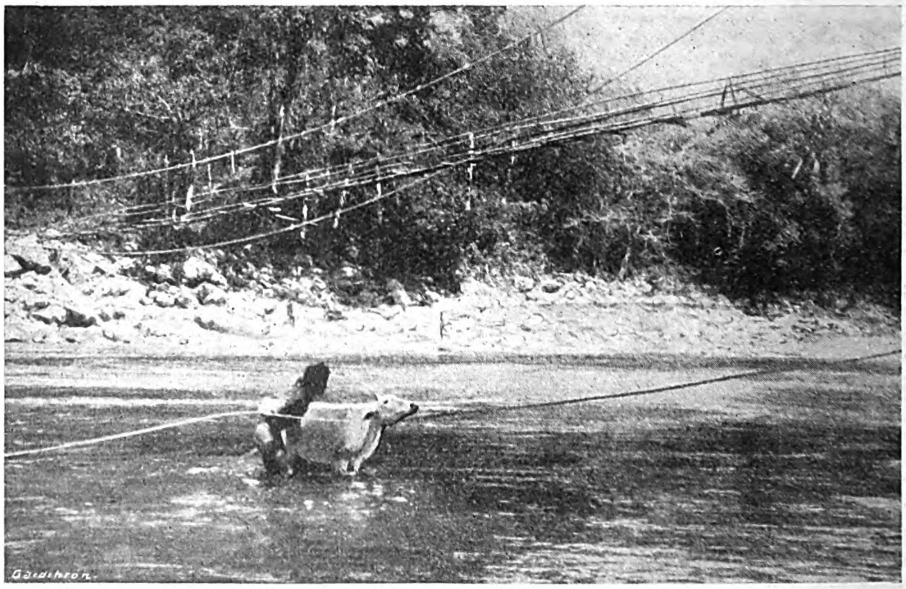
FIG. 63.—MISHMI SWIMMING CATTLE ACROSS THE DELEI RIVER, UNDER ABANDONED BRIDGE.

Besides these, there were in the forest, Begonia, Impatiens and Arisaema; in cultivated places, Violets, Cynoglossum, Polygala, and various small Compositae and Acanthaceae; in open pastures, Solanum; and on wet rocks, the big, violet Chirita, which is a showy plant. But the most gorgeous tropical flower was a species of Aeschynanthus, which instead of having solitary, pert flowers looking out from the paired leaf-axils, flaunted them in balls of audacious scarlet, looking like nothing so much as a blood-red Rhododendron arboreum which had taken to the tree tops. As a matter of fact the plant hung down, a glowing streamer from above, and I rubbed my eyes at first sight of it, wondering whether I had at last really caught that will-o'-the-wisp, a climbing Rhododendron !

After Leguminosae, perhaps the most conspicuous objects in the forest, and certainly the most varied, were the Araliaceae. Commonest of all was the climbing Heptapleurum venulosum, which usually perches itself in the fork of a low tree and develops into a big, slumbering, smothersome bush, although maintaining contact with the ground. This was in flower. Another species flaunted large bunches of small, bright yellow berries, which were rather striking. Then there was Tupidanthus calyptratus, two specimens of which had enveloped as many huge boulders which overhung the river bank, while a third specimen formed an immense climber with a stem as thick as a man's thigh. Heteropanax fragrans and Trevesia palmata have already been mentioned, and one or more species of Brassiopsis were common.

In thickets and secondary growth generally, there were sure to be various Urticaceae and species of Solanum. Among the last-named were S. verbascifolium, a small tree with flannelly leaves and white flowers; S. Kurzii, a thorny shrub with violet flowers, and the herbaceous S. torvum. A fourth species was notable for its wealth of bright orange berries—a small, unarmed, glabrous bush.

Mention must also be made of several Skimmia-like Rutaceae, all of them in fruit. One, which was probably Skimmia Laureola, had scarlet berries, a second, about the same size, had carmine berries, while a third, which often grew to the height of a small tree, albeit a slim one, bore large bunches of purple-black fruits like Cherries. All three formed part of the forest undergrowth. So much for the valley flora; nor was there much difference between the jungle here and on the Sadiya plain. But, as I have stated, we were surrounded by high hills—from certain vantage points, indeed, we could see peaks both up and down the valley, 12,000 feet high or more, and snow-clad. Day after day we had looked up the Delei valley to where a rock-rib curved down from the mountain backbone, shutting out the view beyond, and seen that its sky line was fringed with Conifer forest; or across the Lohit, and lifting our eyes straight up to the 9,000 feet crest, directly opposite us, after the passage of a brisk thunder storm, had observed the ragged file of trees powdered with fresh snow. It might therefore be possible, by an effort, to

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV January 19 and February 2, 1929.

reach a rarer atmosphere, even from our present base line. In the angle between the two rivers, the mountain ridge rose sharply to an altitude of 6,000 feet, directly above our camp; and as early as March 19 we set out to climb the 4,000 feet to the summit.

After toiling up through the forest for a thousand feet, we came out into cultivation on the ridge, where the slope eased off, and it proved an exhausting pull up in the hot sunshine. Cultivation extended intermittently all the way, being carried to 6,000 feet, wherever the face is not too precipitous; but the soil looked hungry, what there was of it, and it was choked with boulders. We passed a solitary hut, with a Peach tree enveloped in a cloud of pink blossom. The path was quite good, as this is the main route into the upper Dou valley, a river which flows into the Lohit just beyond the Delei; and from the summit we saw the snow peaks at the head of the Delei on the one hand, and at the head of the Dou on the other, the whole horse-shoe range blocking the view northwards into Tibet.

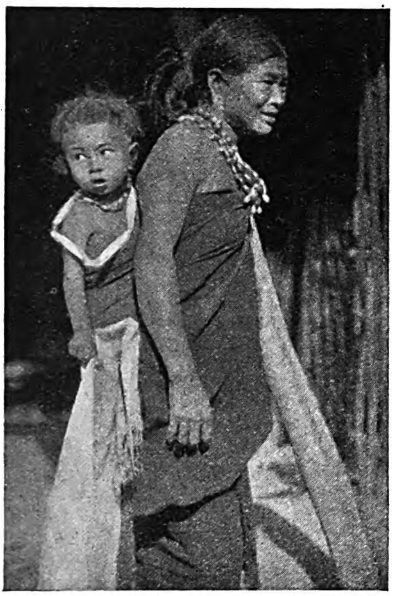

FIG. 64.—HOW BABIES ARE CARRIED IN ASSAM.

Not until we reached the top of the dividing range at 6,000 feet did we find any shadow of a temperate flora. It was now three o'clock. I had time to go a short distance along the ridge, and suddenly I found myself on the fringe of the temperate forest. Here Rhododendron arboreum was just coming freely into flower, and beside it was a 'Stamineum' Rhododendron, with a crop of last year's capsules from which I rescued a few seeds. Other Ericaceae included species of Pieris and Gaultheria, and I also noticed an evergreen Ilex whose breaking leaf-buds covered the bush with amethyst plumes. This loot at least served to whet the appetite, and we got back to camp at dusk after a successful excursion.

We had great difficulty in buying any food locally, and our interpreter, Hubble-Bubble by name (or something like that) spent most of his time going from one remote hut to another trying to procure a fowl or a few eggs. Occasionally he was successful. We also got some small, but quite good Bananas, and a few Sweet Potatos. For the rest we had to supplement our rations of Rice and flour with precious stores.

March 22 was our first really wet day for a fortnight. The 27th was also wet, and the 30th and 31st and April 1. This succession of rainy days, which had effectually stopped all further transport up the Delei, was brought to a close on April 2 with a round of thunder storms, the culminating set-piece going off with a fine bang in the middle of the night. When we woke up on the 3rd to see the sun shining again, the great spur which framed the Delei, and the peak just across the Lohit, were delicately powdered with fresh snow.

During the second half of March, the minimum temperature, at 2,000 feet, averaged about 54° — lowest 49° on the 19th, highest 56·5° on the 16th. On fine mornings there was heavy dew. On wet, sunless days the temperature rose little above 60°, but on fine days it went over 80°, and it was 87° in my tent on April 3.

Bands of Mishmis were still passing by our camp every day. Many of them drove cattle which they had bought on the plains, and as these creatures could not cross the wreck of the Delei bridge, they had to be towed across the river by means of a Bamboo line round the neck (Fig. 63). Swim they could not, although sometimes they made stout efforts; and a frequent result of hauling too hard athwart the fast current was that the miserable animal turned turtle and was pulled ashore in a state of apparent insensibility; although the rapidity of their recovery, when they were pushed right side up and found solid rock beneath them once more, suggested mere bovine resignation.

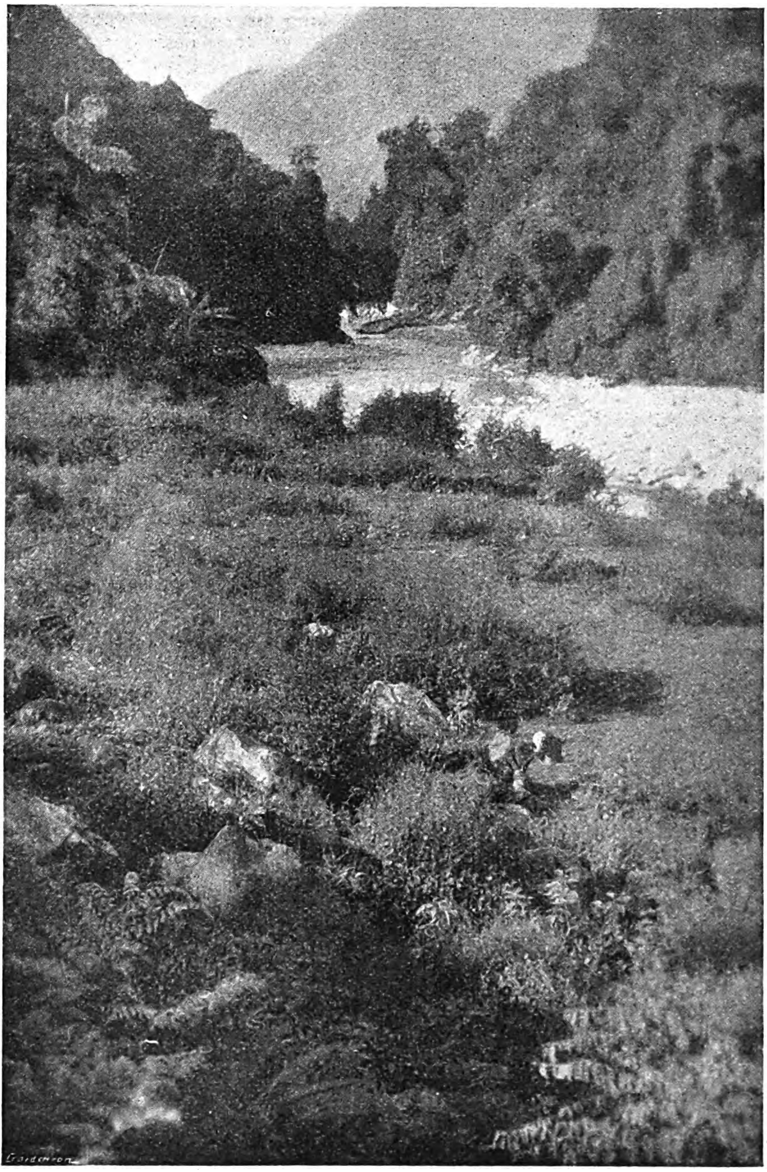

FIG. 65.—THE TIDDING VALLEY, FROM THERONLIANG, THE LAST BUNGALOW IN ADMINISTERED TERRITORY.

After the close of the last rainy session, four coolies arrived to carry loads. By this time we were much exercised to decide what we could do without, being already stripped down to a light camp. The Quartermaster in particular was embarrassed, as he had sent on practically all rations and stores, thinking every day that we should be able to follow them; yet day after day passed, and we were still here, and getting near the end of our tether.

What we wanted, of course, and wanted very badly, was a posse of coolies to move us *holus bolus*; yet we could not afford to send four away empty, and eventually we made up loads for them, still further skinning the camp. When, however, only three coolies arrived next day, I realised that we must go in two detachments. More coolies were promised in the near future, so leaving my companion to follow so soon as possible, I started up the Delei valley on April 4, accompanied by three coolies and the interpreter, with my bedding, botanical presses, and a little food. By this means we reduced the pressure on the food which remained, and, arrived at the forward dump, I could send back ample supplies and, perhaps, coolies, to the rearguard, which would join me at the earliest opportunity. *F. Kingdon Ward.*

PLANT HISTORY IN NOMENCLATURE.

(*Continued from p.* 82).

ORANGES AND LEMONS.

It was only natural in the days when philology was a matter of popular etymology that the name of the delicious golden fruit which we call the Orange should be thought to come from the Latin word for gold. What could be more appropriate ? This false idea is responsible for some of the forms which the name has assumed in its passage from the original Persian through the French and Spanish to the English.

" ORANGE, *aurantio*, Italian : *aurantium*, L., meaning : of *aurea colore*, the colour of gold," state the good old dictionaries of two centuries ago. What could the Golden Apples of the Hesperides be, if they were not Oranges ? As the form of the word has been affected by its long pilgrimage, we naturally turn to the Romance languages for light, and thus learn that in Portuguese an Orange is termed *laranja*, while in Spanish it is *naranga*. In speech the initial letters *l* and *n* are frequently confused, so we may assume these two forms represent the same word. The initial, however, is wanting in the Italian *arancio*, and in the French *orange*, although retained in the Modern Greek *nerantzia* or *narantzia*. Skeat tells us that in French, Orange was formerly spelt *orenge*, and that this stood for *narenge*. In Italian the initial was lost and then *arenge* became *orenge* by popular etymology from *or*, meaning gold. Brachet confirms this. " The French word (he writes) ought to be narange (like the Spanish naranja), but has taken its present form, Orange, from a confusion with the word *or*. In Latin the Orange was called aureum malum (or the golden Apple), and the French consequently thought to find the sense of golden in the word it adopted."

We next have to enquire into the earlier history of the word. If it is not of Latin origin, and has nothing to do with gold, whence did it come, and what did it mean ? Pushing our enquiries back, we find that commerce with the East led the French, Spanish and Portuguese into intimate relations with the Arabs and other Semitic peoples. The Arabs spoke of the Orange as *narandj*, a word which is also found in Persian, and written *naranj*, *narinj*, or *narang*. Comparing the Spanish, Portuguese and Modern Greek with these, we conclude they must be one and the same. Further, in Persian, the Pomegranate is called *nar*, and it would thus appear that the word Orange, or Narange, is intended to suggest a fruit similar to the Pomegranate.

It might be objected that we have no right to assume that the Italian has lost its initial letter, and therefore that we cannot connect *arancio* with *naranj* ; and as such criticism is fair, it must be fairly met. Fortunately, this is easy, and if we enumerate the names for Orange in a number of different dialects and languages, we shall not only find that the initial may be lost, but that if it is retained it is liable to other changes than those already specified. Forms beginning as in the Persian and Arabic are the Milanese *naranz*, Venetian *naranza*, Spanish *naranja*, Wallachian *neranze* and Modern Greek *nerantzi*. Forms with other initials include the Portuguese *laranja*, and Basque *larania*, as well as the curious Catalonian *taronja* and Turkish *turunj*.

In former days no etymology was considered perfect if it could not be traced back to Sanskrit, and it was therefore natural that philologists should try to discover in that language the original of our Orange. One distinguished writer informs us that there was a Sanskrit name for the Orange, and this was written *nagarunga*, or *nagrunga*, and that the Hindûs corrupted this into *narungee*, or *nerunga*, whence the Arabic or Persian *narunj*, the Italian *naranzi*, mediaeval Latin *arancium* and *aurantium*, and the French and English " Orange." Other students, however, have failed to trace the name to the Sanskrit. *Naga* means a serpent, and the term is applied to those fabulous serpents which have a human face. It is therefore easy to imagine how legends regarding serpents in gardens, such as Eden and the Hesperides arose, and how these came to be associated with the Golden Apples. It would not be difficult to imagine that the ancients named the Orange the fruit or tree beloved of the Nagas, but, unfortunately, history and legend alike fail us here. How the Orange is associated with the garden of the Hesperides, however, may be found in that wonderful repertory of plant-lore by Professor Angelo de Gubernatis, entitled *La Mythologie des Plantes*.

This leads us to remark on the curious fact that in Turkey and elsewhere, Oranges are known as Portagals or Portogalotti, about which the same writer gives us much interesting information. If now we enquire into the original home of the Orange we encounter a problem which forces us to consider the names for the fruit to be found in other lands. If the Sweet Orange had been cultivated at a very early date in India, it would, as A. de Candolle remarked, have had a special name in Sanskrit, but it has not. If, however, we turn to China, we find a very instructive series of names. De Candolle stated that we come back by all sorts of ways to the idea that the sweet variety of the Orange came from China and Cochin China, and that it spread into India, perhaps, towards the beginning of the Christian Era. Now the Chinese have several native names for the Orange, and some of these are of such antiquity as to find a place in the oldest dictionaries and classical writings. One of these terms, *kat*, *kwat* or *quat*, is more or less familiar to Europeans in the name Cumquat, or Golden Orange (*Citrus madurensis*), found in south China. Osbeck alluded to it in 1751 as " Kammkatt—the name of a sort of small Lemons, which are not much larger than Cherries." He stated elsewhere of the same plant that it is " a sort of low sweet Orange tree with a small fruit which is called *Gatt* in Canton." Another word for Orange which is very ancient is *kom*, also pronounced *kan*, or *kang*, as in Foochow. This is very ancient, and the picture word is composed of a tree and the symbol for sweet or pleasant, showing that ages ago the Orange was regarded as a great delicacy or as a fruit to be desired. A further native word is *Ch'áng*, and this is used when speaking of Orange wine (*ch'áng tsaû*), Sweet Oranges, and Candied Oranges ; all of which makes it clear that this favourite fruit has long been known to the Chinese.

The Linnean Society's *Flora of China* contains descriptions of some half-a-dozen different species of Citrus from China, and remarks that while the herbarium specimens appear to be all of cultivated origin, there is little doubt that some, if not all, are really native in one part of the country or another. *Hilderic Friend.*

(*To be continued.*)

HEMEROCALLIS.

Mr. B. Y. Morrison's excellent and exhaustive paper on the Yellow Day Lilies (see pp. 50, 65, and 84) received a hearty welcome by English lovers of the genus. When one finds that the Royal Horticultural Society is holding a trial of Hemerocallis at Wisley, and that Mr. Amos Perry's catalogue offers a choice of thirty-nine kinds, I am tempted to think that these charming flowers must at last be gaining a little popularity. I can but wonder that they have not gained it before, for they possess, in most of their forms, bright colouring, fine foliage, pleasant fragrance, and sufficient good nature to accommodate themselves to almost any position in the garden.

I have known and zealously studied the plant for over forty years, and there can be no doubt that in size and shape of flower, to say nothing of colouring, much has been done to awaken interest. I should like, here, to express my warm thanks to my friend Mr. Amos Perry for all that he has done for the Hemerocallis, as well as for his kindness to myself personally, and add that Mr. C. H. Curtis, of *The Gardeners' Chronicle*, was one of the first—in the days of long ago, at York—to offer encouragement in my earliest efforts to improve this genus.

The species known in gardens as H. flava, H. minor, H. fulva (Kwanso), H. Middendorfii, H. Dumortieri (syns. Sieboldii and rutilans) and H. citrina, do not require description ; Mr. Morrison has already described them and indicated the countries from which they originally came. Of H. aurantiaca and H. aurantiaca major, I shall write later ; of these, Mr. Morrison also treats.

To this list has lately been added a dwarf kind named H. nana ; it is of a pleasing orange colour, with a reddish-brown back, and seems likely to be of considerable value to the hybridist. I have grown it for several years, having obtained it from Wisley, thanks to the kindness of Mr. F. J. Chittenden. I have, during the summer of 1928, flowered some of its seedlings. I believe I made the cross both ways between H. flava and H. nana ; at any rate, some of the seedlings are twice as tall as others and may probably have H. flava as mother, while the dwarfer ones may claim the maternity of H. nana.

I learn from Mr. Perry of another new species, named H. plicata, of which he has a high opinion. Thanks to Sir Arthur Hort, I have three kinds which he obtained from the late Mr. H. J. Elwes under the names of H. urmiensis, H. hippeastrioides, and H. Sippan. They flowered with me in 1928, and were quite pretty, although of no special distinction. One other plant, named H. nucerensis, which I possess through the kindness of Mr. R. W. Wallace, of Tunbridge Wells ; although it should, by its name, be a species, I suspect it to be a hybrid of H. citrina. Its name suggests Nocera, near Naples, as its birthplace. It is a fine thing.

Perhaps I may be excused for dipping a little into ancient history in telling the story of how the sight of an established plant of Hemerocallis Middendorfii, in fine flower, by the side of the main walk down the York Nurseries, suggested to me the cross H. flava and H. Middendorfii, which produced H. Apricot ; and H. minor × H. Middendorfii, which gave me H. Frances. Preparatory to my crossing campaign, I obtained twenty-five H. flava and twenty-five H. minor—extra good plants—from Messrs. Fisher, Son and Sibray, of Sheffield. The railway man, who delivered them on a Saturday, surprised me by saying—he must have been a gardener—" I thought you would like to get these plants into the ground so soon as possible." The ground had been prepared for them in haste. I had asked the man who took the waste from the kitchen for his pigs to bring me a little manure. Imagine my horror when, on returning from school, I saw a great heap of raw pig manure ! Never did ordure make its presence known more vehemently. So fear of a visit from the Inspector of Nuisances caused the dreadful mass to be dug in with all speed. Thus I gained a fine stock of these two kinds ; H. flava flourished, but H. minor gradually died out.

Then I obtained H. Dumortieri (syns. Sieboldii and rutilans). The pollen of this variety on H. flava was effective, and resulted in many seedlings, which varied considerably. The tallest, H. Estmere, was quite a good plant ; so was the widely-expanded H. Sovereign, which I originally called H. Beauty. I ought, perhaps, to explain that the names H. Sovereign, H. Gold Dust and H. Orangeman were not given by me, although I was, I believe, the first to make the cross. One of the best seedlings I named H. William Dean, in remembrance of that well-known horticulturist who had visited my garden, and, if I remember rightly, wrote an account of it in this journal. I also, about this time, had a visit from Mr. Amos Perry (senior), whose acquaintance I had made at the Tottenham nurseries, when he was manager there for Mr. Thomas Ware. He had there delighted me by the way in which he got rid of a troublesome but self-satisfied ignoramus who, after talking to Mr. Perry some little time, said, decisively, "And now I want someone who really knows all about them to take me round the Narcissi." Mr. Perry thereupon called a young gardener who was at work close by and said : " Show this gentleman round the Daffodils." Thus, for once, poetical justice was done.

Like other growers, I failed completely to raise seeds from H. fulva. I may state that, in my holiday travels, I carefully examined all the plants of H. fulva that I came across in Switzerland, Auvergne, Italy, Sicily, the Lipari Islands, the Black Sea coast of Asia Minor, and the Caucasus, but I never saw a seed-pod. Eventually, Herr C. Sprenger, of Vomero, Naples, succeeded in crossing H. fulva maculata with H. aurantiaca. But alas! when H. fulva maculata, obtained with much trouble, to my great satisfaction flowered at York, it refused to seed.

When H. aurantiaca major first appeared in catalogues, I bought a plant of it for half-a-guinea. The first year it did not flower; the second year it bloomed in October, too late to be of use. The third year, when I was serving on a deputation from the R.H.S. to the Newcastle-on-Tyne show, Mr. R. W. Wallace exhibited it in flower, so I got him to send me two buds, which opened in water, and, having previously prepared many flowers of H. flava in the garden, I crossed them with its pollen, and thus acquired H. Corona, which has a large and stately bloom.

H. aurantiaca I obtained at a later date, and found it very good-natured. (There was at one time a fine bed of it in the York Nurseries). My best seedling from it and H. flava was named H. Miranda. It failed to gain the Award of Merit, but is, to my mind, one of the best of the tall varieties. I prefer it to H. Corona. The foliage, at any rate in its raiser's judgment, is more graceful than that of any other Day Lily.

H. Thunbergii for several years refused to seed with me, and then suddenly produced seeds in abundance. H. Thunbergii × H. Middendorfii gave a disappointing flower, but I have found it useful as a parent. H. Radiant, although I cannot recall the actual cross, has evidently H. Thunbergii blood in it.

Of H. Tangerine, an early dwarf, very effective in the mass, I have lost the parentage. More striking in colour than any H. Dumortieri, I have yet come across is the seedling named H. Flame, when well established. It may here be observed that all Day Lilies, to appear at their best, must be well established.

The following have gained the Award of Merit (or First Class Certificate) of the Royal Horticultural Society:—

Species.—H. disticha plena, 1860; H. Kwanso plena variegata, 1886, F.C.C.; H. Middendorfii, 1887 (Dr. Regel, A.M., 1905, is a late-flowering form of H. Middendorfii); H. aurantiaca major, 1895, F.C.C.

Hybrids.—Apricot (Yeld), 1893; Frances (Yeld), 1894; Corona (Yeld), 1905; Luteola, (Wallace), 1905; Golden Bell (Wallace), 1915; Lady Fermoy Hesketh (Perry), 1924 (Fig. 35, p. 65); Winsome (Yeld), 1925; Radiant (Yeld), 1925 (the first to obtain an Award of Merit at the Wisley Trial); Margaret Perry (Perry), 1926; and J. S. Gayner (Yeld), 1928 (recommended for trial at Wisley).

Here should also be mentioned my namesake, H. George Yeld, one of Mr. Perry's best flowers; and H. Hyperion, raised by Mr. Franklin B. Mead, of Iriscrest, Fort Wayne, Indiana, who is greatly interested in Day Lilies and grows fifty-eight varieties in his famous garden. Mr. Mead thus describes H. Hyperion: "Hyperion, a cross between H. Sir Michael Foster and H. Florham, is a new seedling raised at Iriscrest, and appears to be the very finest of its genus. It surpasses all other Hemerocallis in size, form, colour and substance, and is equalled or surpassed in texture only by the rare and beautiful Japanese hybrid Royal. The flowers of Hyperion, on stout stems forty-two inches tall, are from five to six inches across, and are of the purest canary-yellow; in comparison, H. flava appears to have some orange in it. Hyperion is one of the most imposing of all perennial plants." Thanks to Mr. Mead's kindness, I hope to flower it in my garden next summer. Mr. Mead informs me that he has sent plants to the Wisley Trial which is now proceeding. *G. Yeld, Orleton, Gerrards Cross.*

THE TREASURE BOX.

Thus have I christened a small piece of rockery which I built some five or six months ago for the accommodation of various rare, curious and otherwise noteworthy plants from the general collection. Where a great many plants are grown together, it is almost unavoidable that a few odds and ends here and there should be overlooked, and it is often these very odds and ends which constitute the most interesting part of the collection so, as stated, this small rockery was built that odds and ends might be planted thereon and increase mightily, which the majority have certainly done.

With the construction of it we need not greatly concern ourselves, sufficient to say that it is built in what I call the "pudding" style, namely, an outcrop jutting from the bare ground, with no great pretension to ornamental design, but intended just as a suitable home for rare plants. It is fully exposed, but has various nooks and crannies wherein may be placed such plants as need a little more shelter than usual; no more than two-and-a-half tons of sandstone were used, so the area is small, so small that I shall soon have to construct another such "pudding," this time in limestone, for many things like Dianthus, Saxifragas, some of the Androsaces, etc., will not thrive in the lime-free soil which I used with the sandstone. The soil consists of equal parts of loam, leaf-mould and granite chips, with a heavy flavouring of silver-sand and kiln dust, which last is the sweepings of the floors of brick kilns, and well-beloved by alpines, although it will grow a fine crop of Marchantia if allowed to become at all soggy.

One of the few plants still in flower is Oxalis hirta, whose deep ruby chalices will expand on a bright day, under the protection of a pane of glass, for this beautiful plant is not quite to be trusted for hardiness if it be left uncovered through the winter's wet. O. lobata, a well-known golden treasure from South America, is almost at the end of its long display of blooms. This plant has a most curious and deceptive habit; in the spring it produces a fine tussock of bright green leaves, which presently disappear, and the owner thereof laments his presumably lost Oxalis; later on, however, up it comes again, this time heralding a display of rich, golden-yellow flowers; it is an invaluable plant, and in a sunny spot and sandy soil will thrive and increase. O. chrysantha is also here; it is not a favourite with everyone, but I must confess to a great weakness for the plant. It is admittedly a ramper in favoured positions, but the trailing shoots of light green, finely-cut leaves are hidden for weeks at a stretch under multitudes of dainty, rather pale yellow flowers, borne on three inch stems. I have to protect it to bring it through the winter here, but on the east coast it is perfectly hardy, and has to be weeded out. It shares, to a marked degree, the great fault of all the Oxalises; directly the sun disappears, so do the flowers close up and demurely hide their glory for the nonce.

In a near-by pocket, filled with very poor, chippy soil, Tulipa saxatilis is just showing through. I have not yet flowered this beauty, which is said to be sparing of its glories in gardens. It is a Cretan species with soft mauve flowers, suffused with yellow at the base of the petals.

Several of the results of a recent collecting trip in Spain and Portugal by my father are here having their first try out, among them being several uncommon Armerias, the best of which is A. Welwitschii, which occurs only on Mount Burrageiros, in Portugal. It is a tight-growing little fellow no taller than A. caespitosa, but with rather longer leaves, which are serrated at the margins; its deep rose flowers are borne on short stems. A. hirsuta is just commencing a late display of flowers, clear soft pink, on six-inch stems, over long, narrow leaves, grey and hirsute. There are several species of Armeria here, so far unnamed, which look very interesting, but have not yet flowered.

Lewisia rediviva is pushing through for its first appearance; this is another plant with a habit, as its name implies, of dying away, only to reappear with renewed vigour and produce the huge flowers, which I can only call "Lewisia-pink," for the Lewisias have a shade of salmon-pink that is peculiarly their own. This plant needs a sunny, well-drained nook, and resents too much moisture during the winter.

Moltkia (Lithospermum) petraea is now settling down, and has made a nice, dwarf bush which looks as though it will certainly flower next year. This is the first time that I have succeeded in making this uncommon little Grecian shrub really at home, and I am looking forward with eagerness to a plentiful display of its blue and purple flowers. Lithospermum intermedium and L. Froebelii are also quite at home, and hold out great promise for next season. Here, also, is another of my triumphs, L. oleaefolium, for never before have I induced this to grow, but now I see that all around my sturdy parent plant bold grey shoots are appearing from underground. It is a rare Pyrenean species, with oval, leathery leaves, silky on the reverse, and flowers of a wonderful, opalescent violet; truly a beautiful plant, but, oh, so difficult! I have not dared to leave my plant unprotected through the winter, so it boasts a large pane of glass all to itself, although it looks sturdy enough to defy the elements at their worst.

Trifolium alpinum is a well-known plant of alpine meadows which is often called to account for its uncertainty of colour, but no such cavil may be made at the pure white form, which I have running about happily, in a fully exposed, well-drained pocket; the flowers are snowy in their purity, and freely produced. Omphalodes lusitanica is another Portuguese introduction of merit, free and almost a rampant grower, with glossy, dark green leaves, and graceful spikes of bright blue flowers, each as large as a threepenny piece.

Origanum Dictamnus is wonderfully effective, with its leaves of thick, grey velvet, and striking, pink, Hop-like flowers, borne in nodding spikes; the felty leaves are best protected from excessive wet.

Richea scoparia, which is doing very well, I know little or nothing of, for it is mentioned only as a name in our text books. It came to me well recommended, and certainly is an attractive little subject with mats of stiff and spiny leaves, in appearance very like an Acantholimon.

A pretty little Umbellifer is Trachymene humilis, which forms a perfectly circular rosette, flat on the ground, of nicely-cut leaves. The flowers are borne on prostrate stems, and make a fringe of white around effective centre rosettes. Leontopodium aloysiodorum gives forth a most refreshing Lemon-scent when rubbed, and is quite distinct from the well-known Edelweiss, with finely-cut leaves, and possessing a shrubby habit.

Dianthuses, on the whole, do not flourish on this lime-free rockwork, two notable exceptions, however, which are making sturdy plants, being D. Napoleon III, and D. Atkinsonii. The latter has a reputation as a "bad-doer" too well-known to need quoting here. The form which I have is called the Wellbrook variety, and was raised in a famous Irish garden; it is, perhaps, of better constitution than the type, and is a glorious colour. D. Napoleon III is an old treasure of gardens, which has almost become lost through over propagation. Asperula hirta, A. lutea and A. suberosa are thriving apace in my treasure box; the last-named is a "miff" of the first water if left exposed to winter wet; the densely woolly growth needs the protection of a piece of glass. A. lutea is more curious than beautiful, for the tiny flowers are a dingy shade of yellow, its only virtue being its rarity.

In a high pocket filled with a good scree mixture, the following Androsaces are making themselves very much at home:—A. carnea. A. c. Laggeri A. praetutiana, A. sempervivoides, and A. Vitaliana; they are quite unprotected and will have to come through the winter as best they can. I think it will be a very good best, for they are glossy-leaved sorts, and appear quite contented so far. A. strigilosa is planted just beneath them. This is the plant which usually passes in commerce as A. foliosa, a much rarer plant, although, perhaps, no more beautiful than the fraudulent bearer of its name, which is handsome enough, with its large leaves and six-inch stems bearing scapes of large, pink flowers. A. Vitaliana passes under so many names that it may be said to answer to any, but although it is variously known as Aretia, Androsace, Gregoria and Douglasia, I believe that the last is correct. It is a lovely plant, provided a flowering form be procured, for alas, there is a form which grows and grows, but never produces the fragrant yellow flowers which stud with such profusion the silvery-grey mats of the good flowering form.

Oenothera caespitosa is sending its questing runners far and wide, and I am truly glad to see this treasure settling down, for the huge, white, changing to pink, flowers are a sight to behold in their season. Another rare plant is Globularia cordifolia var. alba. I have not yet seen it in flower, but if it is as beautiful as its lovely blue type, I shall be well satisfied, and my one plant certainly looks as though it would flower profusely next year, besides giving me numerous rooted offshoots.

The glory of the whole collection this year was Cyananthus incanus var. leiocalyx, a marvellous plant, whose hairy-throated, rather starry bells, of deepest violet-blue, profusely borne on trailing stems, must be seen to be appreciated at their true worth. This also is best protected during the winter when grown outside, and it is an ideal alpine house subject. A plant named Aquilegia salvatorensis fills a corner happily nearby ; it is a gem, just like A. alpina, but barely six inches high, the flowers being the deepest and bluest of blues imaginable, while its foliage is rather dainty and finely cut.

In a very special corner I am trying once again to grow that wretched but beautiful plant, Viola pedata var. bicolor. Each year I try a fresh to establish it, and each year, as the Irishman said, " It dies on me." This year I have hopes, small ones 'tis true, for it was looking so sturdy and well when it went down for its winter rest that I simply cannot believe that it went down to appear no more ; so I live in hope that this year I may be fortunate enough to see, on my own plants, the gorgeous, rich violet and soft lilac flowers, daintily borne on two-inch stems.

There are lots more treasures growing here, but space forbids that I linger longer with them. They may be made the subject of future notes, and perchance included with those I shall hope to make about my " Limestone Treasure Box"—when made. *Will Ingwersen, The Birch, Sharpthorne, Sussex.*

NOTICE OF BOOK.

The Rose.

As the Rose enjoys a popularity almost unrivalled by that of any other flower, especially among the owners of the smaller gardens, it is difficult to state that this little book* is redundant, although it would be easy to apply the hackneyed adage about the making of many books on this subject. After a few quite interesting pages of mingled history and legend there is a detailed classified list (in which we regret to see the name " Wichuriana " thus spelled throughout, a trap into which so many unwary nurserymen incontinently fall). The main portion of the book is occupied by cultural directions, of a kind to be of service either to the gardener or to the large grower, the nurseryman or the park superintendent. In one respect the book does cover ground which is, on the whole, not well covered, at any rate in English, for it is a difficult matter to find a book on Rose-growing or flower-cultivation of any kind in this country for the market-man pure and simple. There are numbers of good illustrations, including one coloured plate of Rose Los Angeles. The book is marred by advertisements placed among the text, a piece of parsimony which is not likely to be justified by the price obtained for the space. It is paper-covered, like so many continental books, but is, otherwise, nicely presented.

THE GENUS PRIMULA.

(*Continued from p.* 105.)

KNUTHIANA (Pax). Knuth's P.
(Farinosae.)

A TUFTED perennial species with somewhat thin, oblong-egg-shaped or lance-shaped leaves one-and-a-half inch to two-and-a-half inches long and about one inch broad, pointed or blunt at the tip, tapering to a short, winged stalk ; margins irregularly toothed ; upper surface sparsely mealy, underside densely so. Flower stems mealy, four to six inches tall, bearing a loose or dense, rounded head of about two dozen blossoms, on short, mealy stalks. Corolla about three-quarters-of-an-inch across, rosy-lilac, paler towards the centre, with a deep rose-coloured eye ; lobes broadly heart-shaped, very deeply notched. The blossoms vary much in depth of tint. *Gard. Chron.* (Col. Suppl. Illus.), June 1, 1912.

Grows in damp mountain pastures in northern Shensi, central China.

Var. brevipes (Pax) is smaller than the type ; flower stem longer than the foliage.

Var. major (Pax) is more robust than the type ; flower stem as long as the foliage.

Culture : As for P. farinosa.

KONGBOENSIS (Ward). Kongbo P.
(Farinosae.)

A minute species hardly more than an inch tall, including the flower stem. The rosettes of membranous leaves have spathulate blades about half-an-inch long, gradually tapering to a scarcely distinct stalk ; margins edged with irregular, sharp teeth ; both surfaces clothed with minute, meal-producing hairs. Flower stem slender, about one inch tall, bearing a compact, spherical head of five to ten stalkless, rose-pink, lilac, or mauve blossoms, with a minute yellow eye. Corolla about a quarter-of-an-inch across, with broadly egg-shaped, notched lobes ; tube cylindrical, about one-eighth-of-an-inch long. Flowers in May and June.

Grows in damp alpine pastures in the open, or in the shade of dwarf Rhododendron bushes, in south-eastern Tibet, at 14,000 to 15,000 feet above sea-level.

Culture : Good, rather heavy calcareous loam, in a damp, half-shady spot, with protection from wet in winter, are the conditions recommended.

LACERATA (W. W. Sm.). Fringed P.
(Petiolaris-Chartacea.)

A slender, delicate, perennial species of great beauty, with a tuft of papery leaves one inch to two-and-a-half inches long, with nearly circular blades about one-and-a-half inch across, rounded at the tip, more or less heart-shaped at the base, borne on short, distinct, minutely downy stalks ; margins nearly entire or edged with obscure, rounded teeth ; both surfaces smooth, underside somewhat glaucous. Flower stems usually numerous, slender, minutely downy, six to nine inches tall, bearing from three to seven sweetly-scented, lavender-blue blossoms with an orange eye, on erect stalks about half-an-inch long. Corolla nearly flat, about three-quarters-of-an-inch across, divided into five narrowly egg-shaped, bilobed segments, cut into several narrow, irregular teeth at the tip, giving the petal a fringed edge ; tube cylindric, slightly longer than the calyx, with a distinct ring in the mouth. Flowers in February and March. Not in cultivation.

Grows on the ledges of cliffs in moss, and on banks, usually in loose soil, in north-western Burma, between Shingrup Chet and Akhyang, at 7,000 to 8,000 feet above sea-level.

Culture : Good friable loam, leaf-soil and peat, in a cool, half-shady spot, with protection from severe frost and wet in winter, is indicated.

LACTEOCAPITATA (Balf. f.). Ivory-leaved P.
(Capitatae.)

This desirable deciduous perennial is a sub-species of P. capitata, and is remarkable for the beautiful ivory tint of the meal on the undersides of its leaves. The stout, almost globular rootstock produces a dense, many-leaved rosette of non-downy leaves four to six inches long, with lance-shaped blades tapering to a wide stalk which has a bright red sheath at the base ; margins undulate, recurved, furnished with sharp, narrow, triangular teeth ; upper surface green, slightly mealy, underside densely coated with ivory-coloured meal. Flower stem about twelve inches tall, rigid, coated with ivory-coloured meal and bearing a rounded head of many more or less reflexed, deep purple blossoms Corolla concave, densely mealy, about five-eighths-of-an-inch long, with nearly square, notched lobes ; tube densely mealy, with a ten-lobed ring in the mouth. Flowers in August. In cultivation in 1913.

Grows in masses of loose limestone, in the Sikkim Himalayas, near Lachen and below Moni Samdong, at 9,000 to 13,000 feet above sea-level.

Culture : As for P. capitata, with protection from wet in winter.

LACTIFLORA (S. Turk.). Milk-flowered P.
(Cortusoides.)

An apparently beautiful species with a tuft of deep green, non-mealy leaves with cordate orbicular blades one-and-a-half inch to three inches long, borne on slender, narrowly-winged stalks, frequently twice the length of the blade and covered with fine hairs ; margins divided into several oval, toothed lobes ; upper surface dark green, smooth or slightly hairy on the nerves, undersurface paler, with usually rather long hairs on the nerves. Flower stem slender, three to eight inches tall, downy below, becoming smooth towards the flowers, which are produced in a loose umbel or short raceme and number from three to ten, borne on stalks three-eighths-of-an-inch to three-quarters-of-an-inch long. Corolla pure white, more or less flat, three-eighths-to three-quarters-of-an-inch across, divided into five broadly heart-shaped, notched lobes ; tube violet-coloured, narrowly cylindric, five-eighths- to three-quarters-of-an-inch long, frequently as much as two-and-a-half times as long as the calyx. Not in cultivation.

Grows in alpine situations in the Province of Samarcand, in Turkestan, Russian central Asia.

Culture : As for P. cortusoides. *A. W. Darnell.*

(*To be continued.*)

HOME CORRESPONDENCE.

Partial Sterilisation of Soil.—On reading Mr. John Butler's letter in *The Gardeners' Chronicle* of January 12 (p. 35), I note that he advocates baking soil to sterilise it, rather than the use of steam. This called to my mind an experience that I had just a year ago, which may be of interest to him and others. I was preparing to sow some Tomato seeds, and first began by sterilising my soil. It was a compost containing good loam, leaf-mould and sand, and I sterilised it with steam. The seeds were sown, they germinated approximately one hundred per cent., and the seedlings were potted on into three-inch pots, and eventually became fine sturdy plants. However, I was told that they should have been better still, so, acting upon instructions, I baked some more soil, of a similar mixture to the first, by the common method of placing the soil upon corrugated sheets of iron resting at either end on bricks, with the fire beneath. The soil was stirred continually until considered baked sufficiently. It was then placed aside, after being damped, and the next day seeds of the same variety of Tomato were sown in pans containing the baked soil, and kept under exactly the same conditions as those sown in steam-sterilised soil. The germination commenced in six days, but it was soon evident that they were a failure, as only about fifty per cent. to sixty per cent. of them germinated ; also, the seed-leaves were distinctly yellow, and when the seedlings showed their first rough foliage leaves, the seed-leaves dropped off. However, the seedlings were potted into three-inch pots but were not worth keeping, for when, after having much care bestowed on them, they reached the height of one foot, it was obvious they would never give a satisfactory crop of fruits. The whole of their foliage was yellow, and the plants looked badly starved, so they were destroyed. The first batch of plants—the result of sowing in steam-sterilised soil—gave a crop above all expectations. *Jack Hardy.*

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* *Le Rosier, Historique, Culture en plein air et sous verre*, by Ed. Van Cauwenberghe. Federation des Sociétés Horticoles, Rue de la Democratie, 31, Auderlecht-Brussels. Price 10 frs.

——In reply to Mr. T. A. Summerfield's query re steam *v.* baking for the sterilisation of soils (p. 67), there is little room for comparison between the two processes, from a commercial aspect. Undoubtedly baking is the simpler, and, if due regard be paid to temperature, the better method for dealing with the small quantities of soil that can be heated in a container. In commercial horticulture, where acres of soil must annually be sterilised—provided the heating process is adopted—steam is the only practicable agent. It is an advantage, as well as the contrary, that a difficulty is often experienced in maintaining the necessary temperature with steam, while if it were possible to bake such quantities, the maximum temperature might be more readily exceeded. On nearly all up-to-date nurseries an oven for baking small removable quantities of soil for seed raising is used, and since such nurseries are all provided with a steaming plant, this fact constitutes a fair answer to your correspondent's enquiry. It would appear when Mr. Shewell-Cooper suggests that the baked soil "can be used while it is still warm for sowing seeds," he has for the moment overlooked the important factor of aeration. I have never seen any of the soil steamed in a container "removed in the form of mud." Such a result is probably due to the application of wet steam, apparently below 80 lbs. pressure. If a reasonable "dry" steam is used, this difficulty should not occur. *John R. Hamilton, Surbiton.*

Number of Florets in an Exhibition Chrysanthemum.—The interesting note from Mr. A. W. Warner (see p. 107), giving the result of his count of the number of florets in a bloom of Chrysanthemum Louisa Pockett, reminds me that in the autumn of 1897, when a student gardener at the Royal Botanic Gardens, Kew, I assisted the late Mr. William Watson, who was then the Assistant Curator, to count the florets of the blooms of three different types of Chrysanthemum. The result of this count is recorded in a characteristically critical and interesting letter in *The Gardeners' Chronicle* of December 19, 1897, over the well-known signature, *W. W.* The flowers dealt with were one each of a type-like seedling, the Incurved Mrs. R. C. Kingston, and the Japanese Madame Carnot. The first, a small-flowered seedling, was taken as being the nearest approach to the wild form. I have copied the table from Mr. Watson's letter as this gives in the best possible form the results of his investigation.

	Type-like Seedling.	Incurved Mrs. R. C. Kingston.	Japanese Madame Carnot.
Weight of capitulum including six inches of leafless stalk ...	½-oz.	3½-ozs.	7½-ozs.
Number of florets in capitulum	205	1,058	1,753
Length of longest florets			
Width of florets ...	⅛-in.	½-in.	½-in.

As all old growers will remember, Madame Carnot was then considered to be the finest exhibition bloom in cultivation. I have no record of its size but, reconstructing from other records, and the fact that Mr. Norman Davis and Mr. H. J. Jones sent Mr. Watson the blooms, I think I might fairly put it as having a diameter of ten inches. On this assumption the difference in the number of florets is astonishing. *A. C. B.*

Magnolias.—In an interesting article on Magnolias by *W. A.*, the writer exhibits a rather deplorable attitude towards the question of nomenclature. Surely, after the revision of a genus correspondents would be doing a great service by using the revised nomenclature, and, if necessary, the obsolete names could be given in parenthesis. *W. A.* pleads using "the names in general use" in order "to avoid confusion," but he is simply adding to the confusion and widening the existing breach between the systematic botanist and the horticulturist. Something is now being done to clear away the fog and labyrinthine difficulties surrounding the nomenclature of plants. It would go a long way towards the attainment of this ideal if such responsible correspondents as *W. A.* would use the revised and up-to-date nomenclature. *Thomas Blythe, Botanic Garden, Cambridge.*

Gardeners' Pay and Status.—This subject, raised by *B. C.*, in *The Gardeners' Chronicle* for January 19 (p. 51), is an old and interesting one. Surely *B. C.* has enough spirit to let us have his version of the subject. First of all, is *B. C.* a gardener? Grit and initiative are not lacking in our profession, but they have not got us anywhere in the matter of wages. It must be stated at the outset that organisations have so far failed us. The British Gardeners' Association was a failure, not on account of its inability to assist the gardening profession, but owing to the workers themselves not joining it in sufficient numbers. Of course, I realise that one was not wanted in private service in those days if he belonged to such an organisation. Although the above failed, there is no reason why some similar body should not be formed again. If an employer is human he would pay his man a decent, living wage; the average gardener is, in most cases, very much underpaid, and to my knowledge there are many so-called gardeners who get jobs by faked references, etc., and, having once secured a post, they are willing to do any kind of work at a low wage, to keep their job. The prospects of an ambitious young man are not always rosy, unless he has influence behind him to help him after gaining a fair experience. *B. C.* has only to scan advertisement columns to get an idea of the pay frequently offered to gardeners. Could not our large horticultural centres introduce some scheme to protect gardeners in the matter of wages, and stop so-called gardeners obtaining good jobs in gardening after twenty-five years in the police force, and while drawing good pensions, etc.? Why run these horticultural centres to train men and turn them out to obtain the first job that comes along? We look to our great horticultural centres to help in this direction. *R. J. Platten, Bournville.*

——On p. 87 of *The Gardeners' Chronicle* for February 2, your correspondent, Mr. Batty, states there is no guild or association worthy of the name to protect gardeners' interests. If Mr. Batty had been present at the Professional Gardeners' Association's Annual Dinner, held in Leeds, on February 2, he would have changed his opinion. This association will, without doubt, embrace the whole of the British Isles in time; how soon, depends entirely on the British gardener. Mr. Batty's advice to your correspondent, *B. C.*, is exactly what the Professional Gardeners' Association is aiming at—to leave the profession better than we found it. *H. B. O.*

NEW CARNATIONS.

THE following varieties have been registered with the British Carnation Society:—

Wivelsfield Buttercup: Buttercup-yellow; from Messrs. Allwood Bros., Haywards Heath. (Award of Merit.)

Guy Allwood: Pale salmon-pink; from Messrs. Allwood Bros. (Award of Merit.)

Rapture: Silvery-pink; from Messrs. Allwood Bros.

Thomas Ives: Cerise; from Messrs. Stuart Low and Co., Bush Hill Park.

THE ECONOMICS OF FRUIT-GROWING IN ENGLAND.[*]

I THINK I am safe in making the very strong assertion that one of the very few agricultural products of this country which are capable of making large profits, both now and in future, is fruit. Other paying lines are apparently vegetables, flowers, probably Hops, and certainly poultry. From information generally received there does not seem much likelihood of an immediate improvement in cereals, meat and milk.

One reason for stating that fruit is likely to be one of the most profitable lines is that our market is made for us and is an expanding one. Every doctor is preaching the health value of fresh fruit as well as preserved and canned fruit. Fruit is no longer a luxury. The higher standard of living ensures its place on every table, and the *last* step in cutting down expenses is that of reducing the value or volume of food. There is no less bread, meat or milk consumed in this country. The reason of their low prices is the lower cost of production elsewhere, or over-production here or elsewhere. The total consumption of fruit in England is put at £200,000,000.

The first thing a manufacturer of any article does *before* he starts to produce is to ascertain the nature of his market, the chances of that market being glutted, the risks of competition, and to foresee as far into the future as he can. If the omens are favourable he goes ahead, creating his market first, and then supplying the demand thus created.

Unfortunately, the agriculturist cannot vary the nature of his product as can the manufacturer. What has hit the farmer so hard is the lower cost of production, easier financial conditions in other parts of the world and/or over-production.

Fruit cannot be produced at a much lower cost elsewhere, except in the case of soft fruits on the Continent, where it is grown by unpaid family labour, or owing to very low wages, or both.

Dealing with Apples first, it is lamentable that we produce here only one-third of the volume consumed. By means of cold storage we could fill our markets practically all the year round except for the fact that, unlike Canada, Australia and the United States of America, our crops are not sufficiently regular to ensure that continuity of supply that is so essential to the successful sale of any product.

So we shall always need imports, and it is an interesting fact that nearly the whole of our own market has been built up by foreign and Dominion Apples. Without these our own Apples would have been in the position they were fifty years ago, whereas the regular supply of well-packed, sound fruit has resulted in the acquisition of the habit in many thousands of homes of eating Apples every day. If a habit can be formed for the consumption of any article the market for that article is assured, provided, of course, that the standard of quality is maintained. The extension of a habit is largely governed by the ability of the housewife to buy, and consequently, although the cost of a habit is not always considered so closely as the cost of most other articles, the multiplication of such a habit depends somewhat upon price level. In spite of our comparative irregularity of crop, our costs of production and transport are much lower than those of other countries. As so much hinges upon the Dominion and foreign supplies, and such imported produce looms so large upon our markets, it may be well to make a few comparisons.

The position of fruit-growing as regards Apples, at any rate, in other countries is very different. In no country except England is any money being made from Apple-growing.

In some of our Dominions the export of Apples can be carried on only by means of export bounties. All the Australian Apple districts are exporting at prices below the cost of production. It costs the West Australian grower 12s. 6d. to produce and deliver in England a bushel of Apples. This is higher than the average price that produce obtains here, in spite of the fact that those Apples arrive here when our own crop is over. At the same period, cold-stored English Bramley's Seedling average 18s. Canada has a very restricted local market and has to export the great bulk of her Apple crop to Europe. In British Columbia the average cost of production is 4s. 6d. per bushel, freight 4s. 2d., and when brokers' charges are added, the return to the grower is not always enough to cover his expenses. Nova Scotia, the most eastern province of Canada, has a climate most similar to England of any part of Canada. It is almost an island. Its Apples are marketed at a lower cost than those of British Columbia, being packed in barrels containing about three bushels. In spite of this, and in spite of being 3,000 miles nearer our shores, Nova Scotian growers cannot make Apples pay. I was informed recently that the farmers there make up the losses incurred by the fruit from profits derived from their farm and dairy produce, an exactly reverse position to that obtaining here. Many fruit-growing farmers here make their fruit help the losses incurred on the farming portion of their holdings.

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[*] A Lecture delivered by Mr. W. P. Seabrook, of Chelmsford, at a meeting of The Farmers' Club, held at the Royal Society of Arts, Adelphi, W.C.2, on Monday, February 4 1929.

The United States of America are in a rather better position. They have an enormous home market which they are able to steady by exporting their surplus to Europe. Also they have a much wider range of fruits owing to their more favourable and congenial range of climate. Pears, Plums, Cherries, and Loganberries are widely grown mainly for canning, which is a huge industry in the States. Nevertheless, in spite of all these advantages, Apple-growers in the U.S.A. are not making a living. The Australian and Canadian Apple growers enjoy far more regular crops than the English grower, but their labour and transport costs are immensely higher. They reckon their costs of production at per bushel, whereas I think the only method of costing Apple-growing in this country is per acre. Their regularity of crop enables them to cost per bushel. Our more irregular crops make it advisable to cost per acre, because in large measure our costs go on irrespective of the crop, the only items which are increased in the case of heavy crops being costs incidental to picking, packing, transport and marketing.

Owing to cheaper labour and transport costs here, these items do not loom so largely as is the case abroad, the transport costs alone in America equalling the total cost of production. Moreover, fruit marketed in the States has to bear, on the average, as high a transport charge as that exported, the inland freights of several thousand miles often exceeding the sea freight of exports, the producing areas being in most cases thousands of miles from the consuming areas.

In this country, the lower labour and transport costs much more than offset the advantage enjoyed abroad by reason of regular crops. Their troubles are not only freight costs, but their insect pests are more virulent than ours and the control of these pests much more costly. They have developed very efficient machinery for dealing with pests, but the necessity for practically continual application of sprays and the labour thus involved is a very heavy cost item. The cost of land suitable for fruit in America is very much higher than good fruit land here. Settlers in British Columbia often pay up to £200 for good fruit land, on top of which are imposed irrigation costs. Land fit for fruit can be bought in England at from £15 per acre.

I am dealing with these comparisons in order to try to disprove the widely held belief that Apple-growing abroad is more profitable than here. The enormous volume of imports leads the casual observer to infer that Apples can only be produced successfully in kinder climates than ours, an impression strengthened by knowledge of the regularity of crops in those kinder climates. Regularity of crops is a valuable asset, but when it is accompanied by such high costs of production and transport as to render those crops unprofitable, the glamour recedes. Another cost attending the marketing and movement of Apples in America which is not regularly incurred here is that of cold storage. Our more temperate climate enables us to store naturally the great bulk of our autumn and winter Apples, thus enabling us to extend the marketing season and steady prices.

Even if we have to cold-store, the cost is only 1s. 0½d. per bushel for six months. We have varieties that are eminently suitable for cold storage, and by reason of their texture will stand up as long or longer than any imported Apple. The reason so little cold storage has been done in the past is that, owing to the lack of continuity of our marketing and the absence of organised marketing, buyers have stopped asking for our varieties immediately the normal season is over, and have gone straight on to imported Apples, which they know will be available for a long period.

The position at present is that we could easily produce every Apple needed until Christmas and with cold storage carry on regular supplies until the Australian crop comes in April. In the U.S.A. organised marketing is carried out to a large extent, consuming areas being fed as and when required, up to saturation point, and no farther.

England could supply her own needs very much more than she is doing to-day, and the result would not be a slump in prices, but replacing much of the foreign fruit with English. If the time should arrive when there was over-production, we have world markets for English Apples. Our merchant service is the finest in the world, ships go direct regularly to all parts, our freights would be lower than for American produce, and our season enables up to ship Apples to other countries in their off season, or to such countries as do not produce Apples. My own firm has been exporting Apples to South Africa and the Argentine since 1906, but the freight cost just after the War rose so sharply that we put boxed Apples on to the home market, with the result that we have built up a very strong demand at home. This export business can be picked up again at any time, and will be so soon as there is any sign of over-production here. Successful marketing of Apples, and, in fact, of all fruit, depends absolutely upon standardisation. The foreign and Dominion growers have built up the whole of their business by means of standardisation and organised marketing. Growers in England have not yet touched the fringe of standardisation. Proximity of markets, the ease with which low and ordinary grades can be sold, and lack of competition in the past, have all combined to delay that standardisation which is so desirable and in which our overseas friends excel. The time has now come when low grades are becoming unsaleable. The public has a choice of fruits from the whole world, and will now buy only such fruit as is standardised and may be relied upon. Just as soon as English growers standardise, pack and grade properly and put on the market fruit as reliable as that which comes from abroad—then, and then only, will that produce take its proper place. It will always make more money by reason of its superior flavour, sub-acidity and general edible quality. But none of these factors have any effect unless the fruit is presented as well as the imported fruit. When it is so presented, it makes higher average prices than any imported fruit *without exception*.

Our markets do not see low grades from abroad. They are either not grown or are not marketed. Until we refrain from growing or marketing our low grades, we shall not regain any appreciable share of the business.

Unfortunately, much of this low-grade fruit sells for something, especially in those areas in which the purchasing power is low. If such low grades are marketed they should be confined to these poorer areas and not come into competition with our better grades. The period of sharpest competition with overseas Apples is during September and October. During those months our Worcester Pearmains, packed, graded and boxed in exactly the same way as Californian Gravensteins, make from 5s. to 10s per bushel more, even in the ports of entry, such as Liverpool. In October, Bramley's Seedlings make from 2s. to 5s. more per bushel than York Imperials from the U.S.A. Numerous instances could be given of direct competition, in which the balance was enormously in favour of the home article. One such occurs to me which happened in Covent Garden Market only last summer. Our Worcester Pearmains were sold from one wholesaler's stand at an average price of 18s. per bushel box. At the adjoining stand on the same day imported Gravensteins and Jonathans were being sold at 8s. But the English fruit must be as well-grown and as well-packed as the imported fruit. It will not sell on quality or flavour alone. If the English Apples look as good or as sound (not necessarily as red) as the foreign Apples, their quality will always give them predominance. English growers say, "Why pack Apples which have to travel a dozen or fifty miles in the same way as Apples packed to travel many thousands of miles?" That is the wrong attitude to adopt. The fact is, we have to meet Apples so packed *here*, irrespective of how many miles they have had to come. In other words, we must adopt the same tactics and present our fruit in the same way as the exporter does. Then the intrinsic quality of our fruit will always bring a higher price. We have now in use in this country grading and sizing machinery. Our box-wood costs less because we are nearer Scandinavia. We can produce Apples cheaper and better than any foreign country, if not with the same regularity. Our transport costs at least 3s. per bushel less. Counties near London can get their Apples on the market at a cost of 4d. per bushel, and the longest journey—from Essex to Glasgow—costs only 1s. 3d. Our scientists have discovered quicker and cheaper methods of controlling pests than the Americans. Our methods of fruit-growing have improved immeasurably in the last few years. That is to say, our knowledge has vastly increased and, fruit growing is not now the risky problem it once was.

It is true that the old-established English grower cannot easily change his varieties, but he is now in possession of much information regarding cultural practices, such as thinning, spraying, manuring and marketing which, if intelligently applied, will enormously enhance the value of his crops.

More progress has been made in the science of fruit-growing during the last ten years than was made in the previous century. As regards thinning, we must copy the Dominion and American growers. They would no more dream of omitting this operation than they would that of spraying. Thinning eliminates most of the inferior grades and brings up the graded level of the remainder without the reduction of a pound in total weight. It merely distributes the same weight over fewer and, therefore, larger Apples. The introduction of winter tar-oil washes removes with one application those two terrors of the past, aphides and caterpillars—or, rather, I should say, all insects (except red spider) whose eggs are present on the trees in winter. Fungus pests (among which black scab is the worst) can now be controlled in larger measure than ever before. Much advance has been made in the science of manuring, particularly by reason of the work done at the Long Ashton Research Station.

Invaluable work has been done at East Malling as regards stocks for fruit trees. That work is in its infancy, but constitutes a very real advance. Plant physiologists are at work at both these stations, Swarbrick's work at Long Ashton on the effect of scion on stock being of much interest. The recently developed and now widely applied practice of ringing fruit trees according to Gardener Brothers' method at Wisbech bids fair to revolutionise commercial Apple-growing in this country, and may be the means of getting more regular crops, which we so badly need. The invaluable Reports of the Ministry of Agriculture's Markets Branch on marketing problems need leave no grower in ignorance of the science of modern marketing methods.

In short, the quality and quantity of fruit needed to regain a much larger share of our own markets can now be obtained with much greater chance of certainty than ever before, *if growers care or are in a position to put such knowledge into practice.*

Now a few words as to the financial position of Apple-growing to-day. Unfortunately, the data as to costs of production are very meagre. Very few growers in the past have kept accurate costings, and very few have kept even particulars of revenue. They are very like farmers in this respect, having no love of accounts and in many cases neither time nor inclination to keep them. They are thus unable to ascertain which crops or varieties are giving the best profits.

Our own position is similar in that while we have accurately recorded the results given by all our fruit crops and ascertained the best method of marketing for each individual crop over a period of twenty-five years, owing to the complications incidental to another business, *i.e.*, fruit tree propagation as apart from fruit growing for market, our costs have not been accurately kept. We have often employed highly paid men from the nursery side on the fruit side because they were available, but whose rate of wages would not otherwise warrant their employment; the orchards are hopelessly mixed up with the nursery land and are being extended every year; buildings, office work, supervision, and many other overheads have overlapped both businesses so inextricably that the task of separate costings appeared insuperable. Therefore our costs of production of fruit are based upon examples and frequent tests only, and not on any sustained system of accounting. In 1925, we bought a farm of 300 acres, most of which is now planted down to permanent fruit and is worked by a separate staff, separate implements, has its own buildings, and the accounts of which have been accurately kept from the start. So we shall know one of these days the actual cost of establishing fruit, bringing it to maturity and eventually the exact financial position.

(*To be concluded.*)

FRUIT GARDEN.

WOOLLY APHIS.

WOOLLY aphis (Eriosoma lanigera) attacks the Apple chiefly, and the Pear occasionally. The aphides pierce the bark and obtain their nourishment entirely from the sap,and when they are present in numbers so much sap is withdrawn that the tree is weakened considerably. They also attack the roots in the same manner, and this renders their extermination rather difficult; the leaves and fruits are rarely attacked, but there is probably a constant migration going on between roots and branches. The woolly aphis may be recognised easily in an orchard by the masses of white, woolly substance formed by the larvae and females.

Various methods of control and eradication have been put forward from time to time, such as banding the trees in the same manner as for winter moth, to prevent the upward migration of the aphides in spring; using a strong caustic winter wash and driving the spray, with some force, into every crack and crevice; and painting the affected parts with methylated spirit, or paraffin, if the trees are old, using a stiff brush and working the spirit into any cankered parts. A mixture of lime-sulphur and nicotine is also recommended, employing the lime-sulphur at a strength of one in twelve, adding one ounce of nicotine for each twelve gallons of the diluted spray.

So far, I have not seen a painter's blow lamp advocated, yet it is a most effective means of eradicating this pest above ground. The lamp is charged and lighted, and so long as the operator directs the flame with very rapid movements all over the trunk and the affected parts, no injury to the tree will result, and not an aphis will be left alive, as the flame is most penetrating. The trunks should then be grease-banded, and the grease kept in a sticky condition. If the infestation is of long standing, the roots of the trees will probably be affected, and measures above ground are therefore insufficient. Probably the only control in such cases is the injection into the soil of carbon bisulphide during March or April, when the soil is in a fairly dry condition. This substance should not, however, be allowed to come into direct contact with the roots, and, being of a highly inflammable nature, is probably best left alone. Instead, the grease-bands should be employed throughout the year, and the parts below them sprayed occasionally with nicotine or paraffin emulsion. *H. H. Cook.*

POTATO NEWS.

MR. WILLIAM STUART, of the Department of Agriculture at Washington, is known to many in this country, and to a number of his friends he has recently sent a *Report of the Research Committee.* This report is a resumé of the work which has been done on Potatos in the United States and other countries during 1927. Many problems are touched in a most interesting way, but the difference in the U.S.A. weather conditions and our own must always be kept closely in mind. Bushnell, who works in Ohio, calls attention to the fact that for two months after harvest, Potatos are in a true dormant state, and that during this resting stage they remain dormant and firm at any ordinary storage temperature, but after that they must be kept in a temperature below 41°F. to prevent sprouting.

The Potato: Its History, Varieties, Culture and Diseases, by Thos. P. McIntosh, of Edinburgh—much of which appeared in these columns—is noted as the most recent addition to Potato literature, and it is declared that parts I, II, and III are especially interesting, and contain much of use to American Potato growers.

PHYSIOLOGICAL RESEARCH.

This seems to have been mostly confined to experiments in the breaking down of the resting period of tubers by means of chemical treatment, and it is said that the results to date give promise of important practical applications. The chief experiment was carried out at Maryland Experimental Station by Mr. White. Potatos were dug mature, on July 18, and treated with ethylene chlorhydrin, and planted on August 1. The plants appeared above ground in three weeks; on September 8, the best lot showed an eighty-two per cent. stand. The crop was dug on November 10, after the tops had been killed by frost; a fair crop of good-sized tubers was produced. Seed tubers untreated did not show above ground until November 1.

Dr. Salaman, of Cambridge, is reported as also experimenting with the chemical treatment of tubers from a different angle.

Two pages are devoted to "Contributions to Potato Breeding in 1927." The chromosomes of the Potato have received special consideration. It is stated that three workers arrived independently at the same conclusion, "and it is almost certain that twenty-four is the basic haploid number in the Potato."

Reference is made to a paper by K. O. Muller, which has a more direct bearing on the practical phases of Potato breeding. This is described as "an excellent piece of work in experimental Potato breeding, dealing with the genetic characteristics of varieties of different maturity." It is stated that the year 1927 was productive of very little scientific investigation bearing on the soils and fertiliser relationship of the Potato. I am not surprised at this. In the actual growing I do not think we have anything to learn from American, French or German methods.

In the "Summary of Contributions to Potato Pathology," much space is given to virus diseases. As every Potato grower is now keenly interested in virus disease problems, I quote rather freely from this part of the report.

"In Europe, the theory of degeneration of Potato varieties as a result of long continued asexual propagation died hard. It has been succeeded in part by a theory which imputes to the environmental conditions under which the seed tubers are produced, a dominant influence on the vigour and productiveness of the ensuing generation aside from any consideration of infection with virus and other diseases. This theory does not deny the existence of virus diseases or their inheritance through tubers, but it holds that the pseudo-hereditary character of degeneration in Potato stocks is mainly the hold-over effect of unfavourable ecological conditions under which the seed tubers developed. Admitting the importance of a favourable environment for seed Potato production, it nevertheless appears that this theory, like the asexual degeneration theory, assumes far too much, and its adherents in Europe, as elsewhere, have not been able to support their claims against the increasing evidence of the predominant rôle of virus diseases."

Murphy and McKay have found that in Ireland Potatos are practically free from the more serious types of degeneration, except for localised areas near the principal cities. Heribert-Nilsson observes that although leaf-roll is so prevalent in certain parts of Sweden that the variety Magnum Bonum is eliminated by disease in four years, a locally selected variety has remained apparently free from disease and vigorous after eleven years of cultivation in the midst of susceptible varieties.

Jaczewski reports, as the result of a Potato disease survey in Russia, that all the various types of mosaic, leaf-roll and spindle tuber occur in that country, but chiefly in the regions where foreign Potatos have been imported for cultivation. The native varieties still appear to be comparatively free from degeneration, and may be more or less resistant to those diseases. It is possible that considerable value would accrue in this country also from an organised search for local varieties which maintain their vigour through long continued cultivation, indicative of resistance to virus diseases.

FUNGUS DISEASES.

Potato wart continues to be a subject of considerable interest to European plant pathologists, it is stated. Reference is made to Miss Glynne's work as follows:—

"In 1926, Miss Glynne found that certain British varieties of Potatos which had been officially certified as immune to wart, developed very small growths when heavily inoculated with the wart organism. In these growths the development of the fungus appeared to be arrested before it produced resting spores, but it is possible that the summer spore stage was produced in some cases. At Rothamstead, Roach continued experiments in grafting together in various ways, roots, shoots and tubers, respectively, of immune and susceptible Potato plants, but found that the resistance or susceptibility of tubers produced on the experimental plants was in no wise altered from the normal reaction. Evidently resistance to this disease does not depend on some substance that circulated in the plant and can traverse a graft fusion layer, but it is due to an innate and fixed property of the cells, probably of the protoplasm."

The work of Millard and others in Britain on the relation of green manuring to the suppression of scab is referred to. We are told that they have recognised twenty different types of Actinomyces, of which eleven can produce scab on Potatos. "These authors showed experimentally that the effect of green manure in reducing Scab depends on the non-parasitic species of Actinomyces, and perhaps other bacteria which the decaying plant residue introduces into the soil, or cause to flourish at the expense of the parasitic types. Where green manure is without effect it is suggested that the proper saprophytic organisms are naturally lacking in the soil."

Spraying for the control of late blight is dealt with, and the most interesting point is the statement that a small admixture of tannin greatly increased the suspensary capacity and adhesiveness of Bordeaux.

I read with great interest the notes on internal brown spot by Millard, and those on "Blue Discoloration," by Botjes in Holland. The former trouble has long been known to growers as "sprain."

A Miss Savartz has discovered a type of internal brown spot of frequent occurrence in the Dutch West Indies, which is different from the European "sprain." She adds that lack of lime in the soil and the over use of stable manure are said to increase the disease. Observation on these lines would be useful in this country where "sprain" is prevalent. Dr. Botjes' "discoloration" seems to describe a disease which in some districts is affecting stocks of Golden Wonder—they are affected, as he describes, with a bluish-black discoloration under the skin, at the stem end, or grey markings may extend through the tuber. In soils with a deficiency of potash, this disease has been found to be most prevalent.

I hope this resumé will interest Potato growers. *William Cuthbertson, Duddingston.*

SOCIETIES.

ROYAL HORTICULTURAL.

February 12.—In spite of the severe wintry weather, there was a very bright show of flowers in the Horticultural Hall, Westminster, on the occasion of the fortnightly meeting of the Society. It must have been a serious undertaking to transport greenhouse plants and forced shrubs successfully from the warm glasshouses, but our horticulturists are accustomed to pit their brains and skill against adverse weather conditions of all sorts, and so it is more than probable that they rarely receive the appreciation their efforts warrant. Orchids were shown quite as extensively and as meritoriously as a fortnight ago, and in much the same genera. The Orchid Committee recommended one First Class Certificate and two Awards of Merit to novelties. Large-flowered Cinerarias, greenhouse Primulas, Carnations, forced shrubs and alpines were the chief floral features. The Floral Committee recommended two Awards of Merit to novelties. The Narcissus and Tulip Committee met for the first time this season, but had no novelty to consider. There was a very good group of early Tulips. There was nothing of moment before the Fruit and Vegetable Committee, but in the hall there were two small collections of well-kept Apples. The exhibits of garden paintings were, as usual, quite interesting.

Orchid Committee.

Present: Mr. Frederick J. Hanbury (in the chair), Mr. Gurney Wilson (Hon. Secretary), Col. Stephenson Clarke, Mr. J. E. Shill, Mr. J. Wilson Potter, Mr. S. Flory, Mr. Charles H. Curtis, Mr. Stuart Low, Mr. A. Dye, Mr. Fred. K. Sander, Mr. T. Armstrong, Mr. E. R. Ashton, and Mr. A. McBean.

First Class Certificate.

Miltonia Lycaena, Orchidhurst var. (*M. Princess Margaret* × *M. Lord Lambourne*).—A splendid Orchid, with flowers of the largest size and finest form. The colour is rich ruby-red, shading to reddish-rose, with a fairly wide white margin—this colouring applies to the wide lip and the petals. The sepals are pointed, white, with reddish-rose shading and lines at the base. The mask is yellow and orange, and the radiating lines are margined with pale rosy-white. Shown by Baron Bruno Schröder (gr. Mr. J. E. Shill), Dell Park, Englefield Green.

Awards of Merit.

Odontioda Matador (*O. St. Andre* × *O. Leander*).—In this hybrid the shapely, substantial blooms are of deep brownish-crimson colour. The lip is of similar colour, with yellowish markings at the base and a white, red-flecked apex. Shown by Messrs. Sanders.

Cymbidium Vesta (*C. Alexanderi* × *C. insigne Sanderi*).—A very pretty and dainty hybrid with flowers of good size pleasingly set in a semi-pendant spike. The colour is pale pink, with numerous rose-red lines and spots on the lip. Shown by Messrs. J. and A. McBean.

Groups.

Notwithstanding the bitter weather of Monday and Tuesday, there was an excellent display of Orchids at Vincent Square, and one which surprised and pleased those who came to the R.H.S. Hall.

S. G. Brown, Esq. (gr. Mr. Thurgood), Brownlands, Shepperton, contributed an interesting group, wherein Dendrobium delicatum, with two dozen spikes of its white flowers, constituted the central feature; it was an unusually fine example. (Cultural Commendation.) Odontoglossum Penelope, O. Duvivierianum, O. Insleayi var. splendens, th handsome old O. bictoniensis, Lycastes in variety, Platyclinis glumacea, Cypripedium Fairrieanum, Coelogyne intermedia and Saccolabium bellinum were included among the other Orchids in this charming display.

Messrs. J. and A. McBean exhibited fine spikes of Odontoglossum mirum, O. Phoebe, O. Thyades, O. Red Admiral, O. Rosina var. coeruleum and O. Vuylstekeae. They also displayed good examples of Cymbidium Omar, C. Pearl, C. Vesta, C. Erica Sander and C. Alexanderi, besides Odontioda Enchantress, Oncidioda Cora, Laelio-Cattleya Profusion, L.-C. Beatrice, Cattleya chocoensis alba, with fourteen flowers; and the brilliant Epiphronitis Veitchii.

Messrs. Sanders devoted considerable space to Cymbidiums and Lycastes, the former including C. Erica Sander, C. Magali Sander, C. Swallow and C. Hookerianum. Besides these, the St. Albans firm showed Angraecum cylindricum, Trichopilia sanguinolenta, Ada aurantiaca, Phalaenopsis Schilleriana var. Vivid, and the quaint Bulbophyllum Dayanum. Numerous good Cypripediums and fine spikes of Oncidium splendidum were included in the display.

Oncidium splendidum also figured prominently in the group exhibited by Messrs. Cowan and Co., and with these were Cymbidium Erica, C. Coningsbyanum, Cattleya Tityus, in fine form; a four-flowered example of the bright C. Woltersiana, Odontioda Grenadier, Odontoglossum Doris, and such fine Cypripediums as C. Royal George, C. Vashti, C. Nora, C. Maudiae var. magnificum and C. Croesus.

A few Orchids were shown by Messrs. Stuart Low and Co., the chief being Cymbidium Castor, C. Romulus, C. Lucastes, C. Coningsbyanum, Zygopetalum Mackayi, Cypripedium Maudiae, C. A. de Lairesse and Brasso-Laelio-Cattleya Highlander.

A beautifully grown plant of Platyclinis glumacea figured in a small group displayed by Mr. J. Evans, but Cypripediums were the main feature. These included C. Makeda var. The Prince, C. Lady Dillon, C Corsair and numerous unnamed hybrids from C. Christopher. Cypripedium Mrs. Carl Holmes, C. Chesham and C. Edzell were shown by Messrs. Black and Flory.

Gus Mayer, Esq. (gr. Mr. Cottam), Whistler's Wood, sent a few Orchids, the best being Odontioda Ramona and Cypripedium Perseus Alpha, Whistler's Wood variety.

Floral Committee.

Present: Section A.—Mr. J. F. McLeod (in the Chair), Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. R. Findlay, Mr. J. M. Bridgeford, Mr. D. Ingamells, Mr. M. C. Allwood, Mr. James B. Riding, Mr. A. E. Vasey, Mr. W. B. Gingell, Mr. D. B. Crane, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mr. G. W. Leak, Mr E. R. Janes, Mr. Courtney Page and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. C. Williams, Mr. G. Reuthe, Mr. F. G. Preston, Mr. W. B. Cranfield, Mr. Reginald Cory, Mr. Mark Fenwick, Lady Beatrix Stanley, Mr. E. A. Bowles, Mr. L. R. Russell, Mr. E. H. Wilding, Sir William Lawrence, Bt., Mr. T. Hay, Mr. Charles T. Musgrave, Mr. Clarence Elliott, Mr. W. J. Bean, Mr. A. Bedford, Hon. Henry D. McLaren, Mr. R. C. Notcutt and Mr. N. K. Gould, Secretary.

Awards of Merit.

Gordonia Lasianthus ?—The award was made subject to revision of name, and there certainly seems room for an element of doubt as to its accuracy, for the specimens shown did not wholly agree with the illustration, t. 668 in *Bot. Mag.*, of a flowering spray. In several respects the sprays shown agree better with the "Camellia axillaris" of *Bot. Mag.*, t. 2,047. According to the *Index Kewensis*, Camellia axillaris is a synonym of Gordonia anomola. A good illustration of a spray of Gordonia anomola, which flowered at Kew, appears in *The Gardeners' Chronicle*, of June 23, 1917. In the specimen which received an award the leaves were coriaceous, lanceolate-spathulate, slightly dentate along the outer halves, pale green and shining above. The flowers were borne in axillary clusters of three or more. The individual flowers were nearly sessile and rounded. The short calyx was brownish and cupped, the corolla, also cupped, was white, crinkled at the margins, and of semi-transparent delicacy. There was a good cluster of yellow filaments. Probably on account of the coldness, we could not detect the fragrance which is generally present in both Gordonia Lasianthus and in G. anomola. Shown by Lt.-Col. Messel, O.B.E. (gr. Mr. J. Comber), Nymans, Handcross, Sussex.

Rhododendron K.W. 6273.—This is a beautiful Chinese species which apparently flowers when quite young, as the three plants were dwarf specimens less than a foot in height. The ovate leaves are two inches long by three-quarters-of-an-inch wide and freely furnished with brown hairs. The flowers are solitary, round, milk-white, and two inches across; the filaments are white, with chocolate anthers. Shown by Lionel de Rothschild, Esq., O.B.E. (gr. Mr. A. Bedford), Exbury, Southampton.

Groups.

The centre of the hall was filled with an exceedingly attractive circular group of large-flowered Cinerarias, arranged by Messrs. Sutton and Sons. The many plants were exceedingly well-grown and illustrated a most desirable strain of this popular greenhouse plant. The arrangement was a series of circles of either a distinct variety or of mixed colours, set in moss and relieved by dwarf Palms. Of the colour varieties Pink Pearl, Royal Blue, Light Blue, Brilliant Ruby, and Blue with white zone, were especially attractive.

On a large side space Samuel Wallrock, Esq. (gr. Mr. W. H. Holloway), The Manor House, Stanmore, Middlesex, set up a very extensive collection of large-flowered Cinerarias which also displayed first-rate cultivation. Some of the plants showed slight signs of the stress of the weather, but, in both cases, it is a tribute to those responsible that so many large plants were safely transported to the show. In the glasshouse, Mr. Wallrock's Cinerarias must have been very beautiful.

A goodly stretch of tabling was filled with greenhouse Primulas and Freesias from the Mental Hospital Gardens (gr. Mr. W. J. Jennings), Napsbury. The many Primulas were of the strain selected and grown at Napsbury over a considerable period, and it was particularly good. Messrs. Stuart Low and Co. grouped large bushes of Camellias with Mimosas (Acacias), and dwarfer Epacrises and Ericas. Alongside they had a good collection of Carnations of such varieties as Master Michael Stoop, Thomas Ives, Melchet Beauty, Brilliant, Daphne and Kathleen.

In their large group of Carnations, Messrs. C. Engelmann, Ltd., included vases of Rouge, Mrs. A. J. Cobb, Master Michael Stoop, Laddie, and Supreme. Messrs. Allwood Bros. had stands of Topsy, Eldorado, Maud Allwood, Red Laddie and a selection of Dianthus Allwoodii varieties.

An imposing group of forced flowering shrubs was arranged by Messrs. L. R. Russell, Ltd. They had tall, graceful examples of various Pyruses, Prunuses, Lilacs and Magnolias, with bushy specimens of Viburnum Carlesii, Forsythia spectabilis and Ericas. Messrs. Hodgsons had a small exhibit of Lilacs and alpines. Mr. George E. P. Wood staged Skimmias, Viburnum Tinus (Laurestinus), and Conifers, with Snowdrops, Crocuses and other spring flowers.

In an extensive collection, Messrs. Wm. Wood and Sons grouped Cryptomeria japonica compacta, Prunus triloba plena, Forsythia spectabilis and Ericas, behind well-flowered Primula Barrowby Gem, early Narcissi and Irises. The Misses Hopkins had a neat paved garden planted with blue and yellow Primroses and Iris reticulata. Messrs. Patricks showed many useful Coniferous and other hardy shrubs.

Especially good spring flowers were shown in quantity and tastefully arranged by Messrs. Barr and Sons. Their early Narcissi included nanus, a pretty N. minor seedling, N. minimus and N. cyclamineus. Among the many dwarf Irises were Rosalie, Princess Louise, reticulata and sind-pers. They also had several showy patches of Crocuses with brilliant yellow, purple, white and striped flowers. Messrs. J. Cheal and Sons had a spring group of Daphne Mezerium, Hamamelis, Crocuses, Muscari and dwarf Irises. Messrs. M. Prichard and Sons again showed small pots of various Saxifrages.

A very attractive rockery made by Messrs. Wm. Cutbush and Son, was planted with a showy group of Azalea Hinomanyo, many Crocuses and Irises. The Lee Green Nurseries

Ltd., had a small rock pool. Messrs. Tuckers showed Primula Winteri, Saxifrages, and Raoulia australis. Messrs. Hollamby grouped Gaultheria procumbens, furnished with its bright berries, Primula Purple Splendour, and small Conifers.

Messrs. Waterer, Sons and Crisp arranged Forsythia spectabilis and other shrubs with Crocuses, Iris reticulata, I. Tauri and Anemone blanda. In his exhibit, Mr. George G. Whitelegg displayed forced ornamental Cherries, Azaleas, Skimmias and many shapely Conifers. The Orpington Nurseries showed Conifers. suitable for the rock garden and some Ericas.

Exhibits of paintings were quite numerous, but the varied displays of sundries which have characterised the shows during the last few months were not in evidence at this meeting. Among the exhibitors of paintings were Miss Ough, who had, as a special feature, an excellent rendering of an old world cottage garden at Lynmouth, Devonshire; Miss E. Francis Drake, Miss Ellen Warrington, Miss Margaret Linnell, Mr. Herbert George, Miss Agnes Strickner, Miss Edith A. Andrews, Mrs. M. Townsend, Miss G. E. Bayley, Miss Eva Kirkpatrick, Miss Alice F. Wilkinson, Miss Winifred Walker, Mrs. Henry Spencer, Miss Marion Broom and Miss Julia Fielding. Garden designs were exhibited by the Lee Green Nurseries.

Narcissus and Tulip Committee.

Present: Mr. George Monro (in the chair), Mr. G. W. Leak, Mrs. Violet Brodie, Mr. W. F. M. Copeland, Mr. W. B. Cranfield, Mr. Charles H. Curtis, Mr. William Poupart, Mr. Peter R. Barr, Mr. F. A. Secrett, Miss E. Willmott and Mr. E. A. Bowles.

As was expected for so early in the season, there were no novelties exhibited before this Committee.

Groups.

The only exhibit with which this Committee had to deal was an attractive group of Tulips, staged by Messrs. James Carter and Co.; the Tulips were arranged in an undulating and gently sloping mound with a background of Conifers. For so early in the season, and considering the weather conditions experienced of late, the blooms were in excellent condition, the most striking sorts shown being Prince of Austria, Grand Duc, Ibis, Gullinan, Flamingo, Red Admiral, Brunhilde, Mon Tresor, Vermilion Brilliant, McKinley, De Wet and Queen Flora.

Fruit and Vegetable Committee.

Present: Mr. James Cheal (in the chair), Mr. W. Poupart, Mr. G. F. Tinley, Mr. W. F. Giles, Mr. W. J. Earl, Mr. H. Prince, Mr. H. Markham, Mr. Edwin Beckett, Mr. A. C. Smith, Mr. E. A. Bunyard, Mr. E. Laxton and Mr. A. N. Rawes, Secretary.

A seedling Apple, named Bowdens Seedling (Cox's Orange Pippin × Cornish Gilliflower), was shown by Mr. G. W. King, Sidcup, Kent. The fruits were of good appearance and richly coloured, but as they were past their best, the Committee was unable to deal with them.

Groups.

An interesting feature of this meeting was the collection of old, and in many instances uncommon, varieties of Apples staged by Messrs. George Bunyard and Co., Ltd. A number of them were continental varieties, and among the most interesting were Reinette Pederstrop, Court Pendu Plat, Reinette Grise de St. Ogne, Reinette de Versailles, Golden Russet, Sweet Laden, Winter Pearmain, Yellow Belleflower, Selig's Golden Reinette, Buff Coat and Api Gros Blanc.

Apples were also shown by Messrs. J. Cheal and Sons, Ltd., the varieties represented in their small group being Annie Elizabeth, Sturmer Pippin, Adams' Pearmain, Encore, Beauty of Kent, Cornish Aromatic, Sandringham, Crawley Beauty, and the recently introduced dessert variety King George V. The fruits displayed were splendidly coloured and in excellent condition.

NATIONAL CHRYSANTHEMUM.

There was an average attendance of members of the National Chrysanthemum Society at the Essex Hall, Strand, London, on Monday, February 4 last, on the occasion of the Annual General Meeting. In the absence of the President, the Hon. Sir John Ward, Mr. E. F. Hawes, Chairman of Committee, was elected Chairman of the meeting. After the usual preliminaries, the Committee's Report and the Cash Statement for the past year were considered and, as they contained records of good work done and an excellent financial position, both were adopted unanimously. In proposing the adoption of the Report and Accounts, the Chairman referred to the excellence of the exhibits at the annual show, and said that he felt sure everyone was delighted to find that the President's veteran gardener, Mr. C. Beckett, was still able to more than hold his own with younger men, as the blooms which he staged were of superlative quality. He felt that the Society was indeed fortunate in having a President who supported it so whole-heartedly in every way. As was stated in the Report, the show of last November was probably the last the Society would hold in the old hall, but the Executive Committee looked forward confidently to the results of the shows which would in future be held in the larger and new hall.

Mr. Hawes, continuing, said that the fact that one-hundred-and-twenty-five new varieties were submitted to the Floral Committee during the year showed the value raisers put on the Society's awards, which were the hall-mark of the Chrysanthemum world. That, out of the number mentioned, only forty-eight varieties received awards was proof of the high standard the Floral Committee rightly set.

The recently instituted trials of early-flowering Chrysanthemums was reviewed, and it seems that Mr. Hatch, who was elected Trials Superintendent, has in his nursery at Cookham, Bucks., nearly three hundred varieties. Already cuttings have been inserted, and it is expected that, as the many varieties will now be grown under identical conditions, the trials this year will be of great value and interest. In due course they will be inspected by the Sub-Committee, which will report its findings and recommendations.

During the year under review, the Society lost, in the death of Mr. H. J. Jones, one of its oldest and most generous supporters. As a tribute to his memory, the meeting stood in silence for a time. Mention was also made of the illnesses of Mr. William Howe and Mr. Mark Mills, two old members of Committee, and sincere hopes were expressed for their speedy and full recovery.

The proposal to publish an "Annual" during the year will be welcomed by members generally, and country readers in particular. The Chairman explained that the cessation of the publication was not due to parsimony, but to the need for waiting until the finances were in such a stable condition as would justify the expectation of continuing the publication regularly in the future.

As already stated, the accounts show an excellent condition. There is a balance on the year's receipts of £170, and the Society now has a total balance of £296 12s. 11d., "being surplus of assets over liabilities." One very encouraging feature of the statement is that it contains the large sum of £31 16s. 0d. derived from arrears, largely of subscriptions. As the Chairman pointed out, the satisfactory financial condition was only obtained through hard work and he was sure everyone would realise that it was entirely due to the enterprise of the secretary, Mr. C. H. Curtis, whose re-election was enthusiastically carried, as also was that of the Hon Sir John Ward as President for the year. Mr. E. F. Hawes was re-elected Chairman of Committee, Mr. Percy Gragg was elected Vice-Chairman, and Mr. David Ingamells was re-elected Hon. Treasurer. As Mr. William Howe and Mr. Mark Mills expressed the desire to retire, their places on the Committee were filled by the appointment of Mr. L. Mills and Mr. W. Yandell; the other members of Committee who were retiring by rotation were re-elected.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, February 1, 1929, at Houldsworth Hall, Deansgate, Manchester, the members of Committee present were: Messrs. H. Astley Bell (in the chair), A. Burns, A. Coningsby, J. Evans, D. McLeod, W. J. Morgan and H. Arthur, Secretary.

Awards of Merit.

Cypripedium Helsa var. Ingrid (*C. Helen II* × *C. Satyr*).—A fine flower showing good evidence of the C. bellatum parent. From Mrs. Bruce and Miss Wrigley.

Oncidium tigrinum, Towneley Grove var.—From J. B. Adamson, Esq.

Cultural Certificate.

To Mr. A. Burns, for fine examples of Platyclinis uncata.

Groups, etc.

J. B. Adamson, Esq. (gr. Mr. J. Howes), Blackpool staged a group to which a Large Silver Gilt Medal was awarded. Cypripediums in variety included C. Tom Worsley, C. Commodore, C. Forest King, C. Rothschildianum, C. Pyramus, C. Memoria F. M. Ogilvie, C. Alabaster, C. Mrs. F. Sander, C. Roundhead and C. Desdemona, Haddon House variety; with these were Brasso-Cattleya British Queen var. Leviathan; Sophro-Laelio-Cattleya Vulcan and Oncidium Forbesii.

Mrs. Bruce and Miss Wrigley, (gr. Mr. A. Burns), Bury, were awarded a Large Silver Medal for a group that contained Cypripedium Carola, C. Invincible, C. Archie Neill, C. Anna, C. Minos Youngii, C. Armistice II, C. Memoria F. M. Ogilvie, C. Obelisk and C. Morning, with Pleione humilis. Mr. John Evans, Colwyn Bay, staged Cymbidium Coningsbyanum and C. Schlegelii; Cypripedium Perseus var., and fine Dendrobium seedlings of the D. Lady Colman type. Messrs. A. J. Keeling and Sons, Bradford, staged Cypripedium Olympus var. The Chairman, C. Fantasiae, C. Macie and C. Pyramus var. Charm.

Mr. D. McLeod, Chorltom-cum-Hardy, staged Cypripediums in variety.

The Secretary regretted to have to record the death of Samuel Gratrix, Esq., one of the founders, a life-long supporter of the Society, and a most enthusiastic lover of Orchids.

Obituary.

Mrs. Arnold Hitchcock.—We very much regret to learn of the death of Mrs. Arnold Hitchcock, whose name has become familiar to Sweet Pea lovers through the variety that bears her name, and also in connection with her business association with Mr. Andrew Ireland. She died in Colchester Hospital quite recently, after a severe operation from which she never recovered consciousness. We offer our deepest sympathy to the family so suddenly bereaved.

Charles D. Inglis.—The seed trade and agriculture in the south-west of Scotland is poorer by the death of Mr. Charles D. Inglis, head of the firm of Messrs. J. Inglis and Son, seed merchants, Ayr, a business that was established by his father in 1832. Deceased, who was in his eighty-ninth year, was born and brought up at Stair House Farm, and for forty-eight years he acted as the firm's traveller, and being a rich humourist and good story-teller, he was very popular among the farmers. Outside of business Mr. Inglis's chief interest was in sport. There were few branches of sport that did not claim his allegiance in his earlier life. At one time he was an enthusiastic hunter and followed Lord Eglinton's pack, and for well over a quarter-of-a-century he was secretary of the Ayrshire Otter Hunt Club. He was a capital shot, a keen angler, curler and bowler, and won many trophies in coursing, his greatest achievement being the success of his dog Iron Duke in winning the Scarisbrook Cup at Southport in the 'seventies. Familiarly known as "Charlie" Inglis, he possessed a genial, warm-hearted disposition that made him a favourite in the wide circle in which he moved, and there was a large attendance of mourners at the funeral on Wednesday, February 6, when his remains were interred in Stair churchyard.

James Muir.—The death took place on Monday, February 4, in the Victoria Infirmary, Glasgow, of Mr. James Muir, head gardener at Crosby Tower, Troon. Deceased was a keen competitor at the leading shows throughout the country and scored notable successes at Glasgow and Edinburgh. He took a keen interest in the Sweet Pea trials, and his services were much sought after as a judge. Before going to Troon, Mr. Muir served in a similar capacity at the Tour, Kilmaurs. The funeral, which took place at Kilmarnock, was attended by a large number of old gardening friends who came from distant parts to pay a last tribute to the deceased, whose lovable and unassuming personality was greatly admired by all.

ANSWERS TO CORRESPONDENTS.

DAPHNE LEAVES DISCOLOURED.—*H. E. C.* No fungus was present on the Daphne leaves. The spots are entirely superficial. Some lesions surrounded by blackened tissue were to be seen and may be due to the punctures made by Aphides, of which there are at least two species known to attack the genus Daphne in this country.

MAKING A LAWN.—*M. Carter.* (1) Lime would aid the growth of Clover by helping to liberate phosphates and potash in the soil; but old grassland very often contains buried seeds of several species of Clover, and when the soil is dug up many of these seeds germinate and grow luxuriantly in the loosened earth. If lime was used in the soil it would be blamed for the Clover; but the latter will spring up from seeds whatever the nature of the soil, without any application of lime. A tennis court is no exception to any other lawn. (2) If the ground is inclined to produce moss it is a sign that the soil is acid, and if no lime were used, moss would appear on it in the course of two or three years. (3) Lime would improve the texture of a heavy, tenacious soil, and chalk broken to the size of Hazel nuts would be just as good as lime at the time of making the lawn. Dressings of sand on the surface afterwards greatly improve the texture, and these could be applied at intervals as found necessary. (4) Sulphate of ammonia extracts the moisture from the leaves of Clover and so kills them; but one dressing will not kill Trifolium repens (Creeping or White Clover). It is often necessary to apply an ounce of it to the square yard, at intervals of a fortnight, to sicken the Clover and kill the creeping stems. By this time the phosphates and potash will be exhausted, and it will be necessary to apply two ounces each of superphosphate of lime, and kainit, to the square yard, to support the grass. On no account use basic slag, because it favours the growth of Clover.

PLANTS FOR SHELTER FROM NORTH.—*C. D.* You do not state whether you require a hedge, or a screen, to shelter your ground, but, as it is not large, a hedge would be best, as shelter belts or screens of trees, unless they are broad, are apt to become open and draughty at the bottom. A Beech hedge should prove most suitable for your exposed position, as it does well in such situations, and in your type of soil. Beech makes an excellent close hedge, which would afford good shelter, as the old leaves are retained throughout the winter.

Communications Received.—A. T. J.—T. P.—W. S. C. T. B.—A. F.—D. M.—J. C.—G. F. W.—F. K. W.—G. H. C.—M. W.—S. A.—T. B.—R. F.

MARKETS.

COVENT GARDEN. Tuesday, February 12, 1929.

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	21 0-24 0
—cuneatum, per doz. bun. ...	12 0-15 0
Anemone, St. Brigid. per doz.	6 0—9 0
Arums (Richardias), per doz. blooms ...	9 0-10 0
Asparagus plumosus, per bun., long trails ...	2 6—3 0
—med. sprays	2 0—2 6
—short „ ...	— 1 0
—Sprengeri, bun. long sprays...	2 0—2 6
—med. „ ...	1 0—1 6
—short „ ...	0 6—1 9
Camellias, white, per doz. blooms	3 0—3 6
Carnations, per doz. blooms	3 6—5 0
Chrysanthemums—	
—white, per doz. bunches ...	48 0-60 0
—white, per doz. blooms ...	6 0—9 0
—yellow, per doz. blooms ...	6 0—8 0
—bronze, per doz. blooms ...	6 0—8 0
Croton leaves, per doz. ...	1 9—2 6
Daffodils, single, per doz. bun.	10 0-15 0
—King Alfred, per doz. bun.	18 0-24 0
—double, per doz. bun. ...	9 0-10 0
—Victoria, per doz. bun. ...	15 0-18 0
—Princeps, per doz. bun. ...	8 0-10 0
—Sir Watkin, per doz. bun.	10 0-15 0
Fern, French, per doz. bun.	10 0-12 0
Forget-me-nots, per doz. bun.	12 0-15 0
Freesias, white, per doz. bun.	3 6 4 6
Heather, white, per doz. bun.	9 0-12 0
Iris tingitana, per doz. blooms	5 0—6 0
Lilac, white, per doz. sprays ...	6 0-10 0
—mauve, per doz. sprays ...	6 0—9 0
Lilium longiflorum, long, per bun.	8 0—9 0
— — short, per doz. blooms	9 0-10 0
—speciosum rubrum, long, per doz. ...	5 6—6 0
— — — short, per doz. ...	3 6—4 6
Lily-of-the-Valley, per doz. bun.	18 0-30 0

	s. d. s. d
Myrtle, green, per doz. bun.	1 6—2 6
Narcissus, Paper White, per doz. bun.... ...	9 0-10 0
—Soliel d'Or, per doz. bun.	10 0-12 0
—Elvira, per doz. bun.	15 0-18 0
—Grand Primo	8 0—9 0
—poeticus, per doz. bun. ...	9 0-12 0
Orchids. per doz.	
—Cattleyas ...	18 0-30 0
—Cypripediums	9 0-18 0
Prunus triloba, per bunch ...	4 0—5 0
Roses, per doz. blooms—	
—Mme. Butterfly	12 0-15 0
Smilax, per doz. trails ...	4 6—5 0
Snowdrops, single, per doz. bun.... ...	3 0—6 0
Tulips, per doz. bun—	
—white ...	24 0-39 0
—yellow ...	24 0-30 0
—red	18 0-27 0
—pink	24 0-36 0
—terra-cotta ...	18 0-24 0
—mauve ...	24 0-30 0
—double varieties	24 0-36 0
—Darwin's, pink, per doz. bun.	36 0-42 0
— — red, per doz. bun. ...	36 0-42 0
Violets, Prince of Wales, per doz. bun.... ...	4 0—6 0
French Flowers—	
—Acacia (Mimosa), per doz. bun.	12 0-15 0
—Anemones, De Caen, per doz. bun.... ...	21 0-24 0
—Marguerites, yellow. per doz. bun. ...	6 0—8 0
—Marigolds, per pad	9 0-12 0
—Narcissus— Paper White, per doz. bun.	6 0—7 0
—Soliel d'Or, per doz. bun. ...	5 0—6 0
—Ranunculus— double scarlet, per doz. bun.	10 0-12 0
— — carmine, per doz. bun.	10 0-12 0
—Roses, Safrano, per pkt 24's	3 6—4 0
— — Ulrich Brunner, per doz. blooms ...	5 0—7 0
—Violets, Parma, large, per bun.	6 0—8 0

REMARKS.—In this department most lines have been somewhat shorter during the past week. Lilium longiflorum blooms in particular have been very scarce. Arums (Richardias) have been fairly plentiful. Good Daffodil blooms have been cleared very early each morning, only very small consignments of these having been received from the Channel Islands during the past week. Carnations are poor generally, first-quality blooms being in good demand, especially of Delight, Favourite, Eileen Lowe, Cupid, Spectrum, Mavis and Dora. Among Roses, Columbia and Richmond are the best at present; being new crop blooms, supplies are still very limited. In the French Department conditions have not improved, prices still remaining high for Paper White Narcissi, white Stock, Anemones and Violets. Nearly all the supplying districts have been affected by unfavourable weather conditions.

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Cox's Orange Pippin, doz....	2 6—5 0
—Bramley's Seedling	8 0-16 0
—American—	
—Newtown ...	12 0-14 0
—Albemarle Pippin, per barrel	30 0-35 0
—Nova Scotian—	
—Ben Davis ...	21 0-24 0
—Starks ...	22 0-25 0
—Fallowaters...	22 0-28 0
—Golden Russet	22 0-34 0
—Baldwin ...	22 0-26 0

	s. d. s. d.
Bananas, per bun.... ...	18 0-25 0
Dates, dry, in cartons ...	4 6—5 6
Grapes—	
—Gros Colmar	2 0—4 0
—Almeria, per barrel ...	24 0-26 0
—Belgian, Colmar	2 0—2 3
—Cape—	
—Black Prince, per box ...	— 10 0
—Hermitage ...	12 0-15 0
Grape Fruits—	
—Jamaica ...	18 0-20 0
—Florida ...	22 6-25 0
—Honduras ...	19 0-20 0

Fruit: Average Wholesale Prices—continued.

	s. d. s. d.
Lemons, per case—	
—Messina ...	11 0-27 6
Nectarines, Cape, per tray ...	5 0—8 0
Nuts—	
—Cases... ...	14 0-25 0
—Boxes ...	10 6-14 0
Oranges—	
—Palermo Bitter	9 0-10 0
—Seville, per case	20 0-26 0
—Almeria, case	24 0-40 0
—Jaffa ...	16 0-18 0
—Denia ...	14 0-20 0

	s. d. s. d
Peaches, South African, tray	4 0—8 0
Pears, Cape, Clapp's Favourite ...	5 0—6 0
—Californian— Winter Nelis, ½-tray ...	13 0-14 0
Pineapples, case	20 0-35 0
Plums, South African—	
—Santa Rosa ...	3 6—6 0
—Wickson ...	3 6—6 0
—Chalcots ...	6 0—8 0
—Apple Plum...	6 0-12 0
—Satsuma ...	4 0—5 0

REMARKS.—There is a slight improvement in trade generally but the Market was glutted last week with Roscoff Cauliflowers.

GLASGOW.

Business in the cut flower market was quieter during the past week, and prices generally reflected an easier tendency. Early Tulips were very plentiful and on occasions the daily supplies exceeded the trade demand. William Pitt ranged in price from 1s. 2d. to 1s. 6d. for 6's; Bartigon and White Hawk, 1s. to 1s. 6d.; Le Notre, Cullinan and Couronne d'Or, 1s. to 1s. 3d.; Pink Blossom, 10d. to 1s. 2d.; Murillo and William Copland, 8d. to 1s. 2d.; Flamingo and Prosperity, 9d. to 1s.; Prince of Austria and White Diana, 8d. to 1s.; Thomas Moore, 7d. to 1s.; Mon. Tresor, 10d.; and Brilliant, 6d. to 10d. Daffodils are now arriving in greater quantities. Golden Spurs sold at 7d. to 1s. 4d. for 12's; Victoria, 1s. 6d.; ornatus, 7d. to 1s.; Soleil d'Or, 5d. to 8d.; and Narcissi, 2s. 6d. to 4s. per dozen bunches. Blue Irises were worth from 2s. 3d. to 2s. 6d; for 6's; loose Chrysanthemum blooms, 3s. to 5s. per dozen; Carnations, 2s. 6d. to 6s.; Pink Roses (Columbia), 14s.; Richmond, 10s.; Anemones, 2s.; Ranunculi, 2s. 6d.; Richardias, 7s. to 10s.; Snowdrops, 3d. and 4d. per bunch; Lilac, 2s. to 3s.; Lily-of-the-Valley, 1s. 6d. to 2s.; English Violets, 2s. per dozen bunches; French Violets, 3s. to 4s.; Asparagus, short, 10d. per bunch; medium, 1s. 6d.; trails, 2s. to 3s.; and Smilax, 1s. 6d. to 2s. 6d.

Pot plants were slow to move. Bay trees sold at 12s. each; Aralias, 2s. 6d.; Aucubas, 1s. 4d.; Dracaena, 1s. 6d. to 3s.; and Aspidistras, 1s. 2d. to 2s. 4d.

The fruit market displayed a firm tone. A cargo of Jaffa Oranges realised the following prices:—144's, 18s.; 128's, 15s. 6d. to 17s.; 240's, 18s.; 112's, 15s. to 16s.; 100's, 15s. 6d.; 120's, 16s.; and 80's, 14s. 6d. Quotations for Valencia Oranges were, 200's and 240's, 15s. 6d. to 22s.; 300's, 16s. 6d. to 20s.; 360's, 15s. 6d. to 18s. 6d.; 504's, 15s. 6d. to 18s.; 420's, 24s. 6d. to 26s.; large 420's, 28s. to 32s. Seville bitter Oranges sold at 20s. to 22s.; Murcia Lemons, 300's, 16s. 6d. to 23s. 6d.; 360's 16s. to 20s.; 504's, 12s. to 12s. 6d. Prices realised for American Apples were King of the Pippins, 28s. to 32s. per barrel; Albemarle, 26s. to 40s.; Greenings, 25s. to 30s.; Baldwins, 16s. to 22s. Pine Apples sold at 2s. 6d. to 3s. 6d. each; English-grown black Grapes, 2s. 6d. to 3s. 3d. per lb.; Cape Peaches, 4s. to 7s. per tray: and Plums, 4s. to 6s.

In the vegetable section, Cucumbers were cheaper at 1s. 6d. to 1s. 9d. each; while French Beans realised 7s. 6d. per box; Cauliflowers, 5s. to 8s. per crate of two dozen; Lettuce, 3s. 9d. per dozen; and Mushrooms, 2s. per lb.

GARDENING APPOINTMENT.

Mr. James A. Paice, for the past five-and-a-half years Gardener to C. E. GABAIN, Esq., J.P., Sunnyfields, Mill Hill, N.W.7, and previously nine years with the Rev. EDGAR STOGDON, Aldenham Vicarage, Watford, Hertfordshire, as Gardener to RICHARD D. HARDY, Esq., Copseham, Esher, Surrey. (Thanks for 2s. for the R.G.O.F. Box.—EDS.).

CATALOGUES RECEIVED.

CANNELL AND SONS, Loddon, Norfolk.—Flower and Vegetable Seeds, Bulbs, etc.

W. A. R. CLIFTON, Willingdon, Sussex.—Antirrhinums, Zonal Pelargoniums and Chrysanthemums.

C. L. CURTIS, Chatteris, Cambs.—Flower and Vegetable Seeds and Plants, Roses, Fruit Trees and Bushes, Ornamental Trees and Shrubs.

MAXWELL AND BEALE, Broadstone, Dorset.—Alpine and Herbaceous Plants.

R. H. BATH, LTD., Wisbech.—Gladioli.

WM. POWER AND CO., Waterford.—Flower and Vegetable Seeds.

BARR AND SONS, London.—Montbretia and Gladiolus hybrids.

BARR AND SONS, London.—Bulbs and Tubers for Spring and Winter Planting.

JOHN SCOTT AND CO., Merriott, Somerset.—Hardy Trees and Shrubs.

Foreign.

W. ATLEE BURPEE AND CO., Philadelphia.—Flower and Vegetable Seeds, Roses, Bulbs, etc.

ROBERT GULZOW, Berlin.—Cacti and Succulents.

L. FERARD, Paris.—Flower and Vegetable Seeds, Bedding Plants, etc.

HENRY A. DREER, Philadelphia.—Flower and Vegetable Seeds, Roses, Bulbs, Garden and Greenhouse Plants, etc.

THE

Gardeners' Chronicle

No. 2,200.—*SATURDAY, FEBRUARY* 23, 1929.

CONTENTS.

Alpine garden—
- Moltkia petraea ... 136
- Ourisia macrophylla 136
- Putoria calabrica ... 136
- Sedum Middendorffianum 136

Bacteria as indicators of soil fertility ... 131
Bulb garden—
- Lilium philippinense var. formosanum 136

Chrysanthemums, a new disease of ... 133
Fruit-growing in England, economics of... 146
Flower garden—
- Papaver rupifragum var. atlanticum... 138
- Portulacas 137

Fruit Garden, Market 147
Hardy flower border—
- Monardas 136

Indoor plants—
- Aphelandra aurantiaca var. Roezlii 137

Kew, notes from ... 141
Lambeau, M. Firmin... 132
Lapagerias 145
Meconopsis, a fungus disease of 143
Musa Ensete 137
New Zealand plant hunter, notes from a 140
Obituary—
- Couderc, Georges ... 150
- Hoskins, Joesph ... 150
- Hunter, Gilbert R.... 150
- Mosley, Seth L. ... 150
- Ramstetter, Mathias 151
- Trevithick, W. E. ... 151

Potato inspection, seed 145
Primula, the genus ... 142
Societies—
- Cardiff Gardeners' 148
- Croydon Horticultural 150
- Elgin Horticultural 150
- Guildford Chrysanthemum 148
- Kingston and Surbiton Chrysanthemum 150
- London and South of England Viola and Pansy 150
- Newcastle Horticultural 148
- Parks and Botanic Gardens Superintendents'... ... 150
- Professional Gardeners' 148
- Royal Gardeners' Orphan Fund ... 149
- Salisbury Gardeners' 149

Soil sterilisation ... 145
Trees and shrubs—
- Bruckenthalia spiculifolia 138
- Myrtus nummularia 138

Vegetable garden—
- The Leek 148

Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 138
Week's work, the ... 134
Welsh garden, notes from a 142

ILLUSTRATIONS.

Cypripediums, collection of rare hybrid, exhibited in Brussels by M. Firmin Lambeau 133
Dicksonia squarrosa in New Zealand Forest 140
Gordonia Lasianthus (?)... 141
Lambeau, M. Firmin 132
Leptospermum ericoides, mature stand of 140
Musa Ensete 137
Rhododendron sp., K.W. 6,273 135
Ward's, Mr. F. Kingdon, tenth expedition in Asia 138, 139

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 40.2°.

Actual Temperature—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, February 20, 10 a.m. Bar. 30·5. Temp. 32°. Weather, Misty.

Bacteria as Indicaters of Soil Fertility.

The observant cultivator is well aware that the weeds growing in arable or grassland soils are faithful indicators of the general character and fertility of those soils. He knows that certain weeds, Nettles, for example, testify that the soil is well supplied with nitrogen, and that other weeds —plants of poverty—are a sure sign that the soil lacks some of the essential food materials on which fertility depends. It is possible, indeed, for the observant to go further and infer from the flora covering it whether a soil is an acid one or not. It has, however, long been evident that the micro-flora of the soil could, and it would, divulge much fuller information than that vouchsafed by weeds and such-like plants of larger growth. Micro-organisms—bacteria, for example—increase and multiply at a prodigious rate and therefore, were it known that three or four soil bacteria of well defined and easily recognised form are the habitués of fertile soil, it would be a matter merely of a day or two for anyone skilled in bacteriological technique—a fairly simple business—to decide whether a given soil is destined to prove fertile or infertile. For if the bacterial indicators of fertility refused to grow at their normal rate when planted therein, the soil in question could be classified among the infertile. A recent paper by H. J. Conn[*] adduces evidence which prompts the foregoing reflections. Dr. Conn has isolated a micro-organism which he names Bacterium globiformis, n. sp., from fertile soils. When "planted" in certain soils known to be infertile, B. globiformis refuses to grow. In other infertile soils, however, the micro-organism *will* grow, so that its fastidiousness is not so complete as it should be for it to qualify as a first-class indicator of soil fertility. Having regard, however, to the catholicity in taste of Bacterium globiformis in the matter of food, it is surprising that any soil should be found insufficient for its nutrition. For B. globiformis will absorb nitrogen in very varied form and carbon in a yet greater variety of compounds. It may, therefore, be that this bacterium is after all not so much an indicator of fertile soils as of acid soils, for as Dr. Conn has shown, B. globiformis cannot abide acidity. Here we are brought up against that greatest of all agricultural and horticultural puzzles—what does actually constitute soil fertility? The question seems so easy to answer when the happy grower has at his command a deep, black, well-drained loam, in which every crop easily achieves perfection. But it becomes hard to answer when the cultivator has spent three or four years trying to impart fertility to one of those unkindly, half sandy, half clayey soils which occur frequently in some of our southern counties. It is on such soils as these that the soil bacteriologist might concentrate, for, if soil bacteria are related to soil fertility, he might find that, as the years go on and the labour of improving fertility in one of these refractory soils receives a grudging response, the soil micro-flora might show a parallel development. Albeit a long, distant problem, it is an important one, for the areas of really fertile land, although vast, are by no means coterminous with the areas devoted to agriculture. In other words, many cultivators are, perforce, compelled to grow crops on land which falls short of high fertility. Any discovery which showed how these less fertile lands may be made more fertile, would confer much happiness on mankind.

Royal Horticultural Society's Next Meeting.—On Tuesday, February 26, the Annual Meeting of Fellows of the Royal Horticultural Society will be held in the New Hall. The exhibition will also be held in the New Hall and, of course, the Standing Committees will meet there. We learn that the restaurant will be in full working order on this occasion.

Appointments at Kew.—The following appointments at the Royal Botanic Gardens, Kew, have been made by the Minister of Agriculture and Fisheries:—Miss M. L. Green, B.A., F.L.S., to be an Assistant in the Herbarium, on the re-grading of her post as Sub-Assistant for the *Index Kewensis*; and Mr. E. M. Marsden-Jones, F.L.S., to be an Honorary Associate for Transplant and Breeding Experiments.

Langdale Valley.—Through the generosity of Professor G. M. Trevelyan, the National Trust has acquired about four hundred acres at the head of the famous Langdale Valley, in the Lake district. The property was purchased by Professor Trevelyan and presented to the Trust. It consists mainly of farmland, and includes Stool End Farm, Wall End Farm, and the Old Dungeon Ghyll Hotel. The property is not to become a public open space, but henceforth there will be no danger of it being "developed," and the retention of its natural beauty, unmarred by fresh buildings, is assured for all time.

Potato Wart Disease Immunity Trials, 1929.—The Ministry of Agriculture and Fisheries will continue during the coming season to test, at the Potato Testing Station of the National Institute of Agricultural Botany, at Ormskirk, Potatos and Potato seedlings as to their immunity from, or susceptibility to, Wart disease. Entry forms (No. 345 H.D.) and full particulars of the conditions governing the acceptance of Potatos for trial, may be obtained from the Ministry. Potatos are accepted from foreign growers on certain conditions set out in the rules, but no foreign variety will be formally "approved," and no certificate issued, until it is definitely introduced into commerce in Great Britain. The Ministry desires to encourage the breeding of new varieties of Potatos, and in order to provide information for breeders of seedlings. it is prepared to accept, up to March 1, not fewer than two tubers, and not more than five tubers, of any seedlings for testing in the laboratory, and to furnish a report on the results obtained without payment of a fee. A report of the result will usually be sent within five or six weeks of the receipt of tubers. These tests, however, will not be considered as forming part of the Immunity Trials proper, and will not be reckoned in the minimum period of two years referred to in the rules. The results of these tests will not be included in any report issued by the Ministry.

National Appeal on behalf of Studley College.—A national appeal for £20,000 has been launched by Lady Londonderry, as President of the Council, on behalf of the Studley Horticultural and Agricultural College for Women, Warwickshire. The lease of Studley Castle and the estate, comprising 340 acres, expires on July 1 next, and it is the desire of the Governors to exercise an option to purchase before that date. £10,000 is needed to meet the purchase price and to secure a promised grant from the Government of £5,000, while the remainder of the sum specified is required to repair and enlarge some of the existing farm buildings, and for other constructional purposes.

Fumigation with Hydrocyanic Acid Gas.—To those who are not conversant with the methods of using hydrocyanic acid gas for the fumigation of glasshouses, etc., we recommend the leaflet (No. 188), recently received by us from the Ministry of Agriculture and Fisheries, which deals with this subject in a brief and concise manner. In it is set forth information concerning the materials required, the doses suitable for different types of plants, and the best method of fumigating. It is a handy pamphlet for the gardener to have by him for reference purposes.

The Shortage of Biologists.—Much has been written in the daily press concerning the present shortage of biologists, and a review of the situation appears in the February issue of the *Journal* of the Ministry of Agriculture. In this, it is stated that there is a large and growing demand throughout the British Empire for men trained in the biological sciences, a demand which the Universities have not so far been able to satisfy, so that there is at present a dearth of qualified biologists. The reason given for this is that, from the elementary schools upwards to the Universities, there is a predominance of the physical over the biological sciences. The increased demand for qualified biologists is due to the fact that it is now recognised throughout the Empire that the services of the biologists are indispensable in connection with agriculture in all its branches, for the purposes of combating insect pests and fungus diseases of crops; breeding improved varieties and improving the yield and quality of crops; breeding improved races of livestock; increasing the output of meat and dairy produce; combating animal diseases; and preventing losses in the storage and transport of agricultural produce. It is stated that: "The prospects before able young biologists promise to be very bright for a long time to come, and it is important that parents and boys should recognise this fact." Salaries in Great Britain range from £300 to £800 per annum, with higher ones for directors of institutes; in the colonies they usually range from £500 to £950 per annum; while some of the highest appointments carry salaries of from £1,200 to £2,000 per annum. In this review of the situation sound advice is given regarding the means whereby training in biology may be acquired, and those who are interested and require enlightenment as to the various scholarships and grants available for would-be biologists are advised to obtain the pamphlet entitled *Notes on the Grants to Research Workers and Students*, published by H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2, price 2d.

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[*] "A type of Bacteria abundant in productive soils, but apparently lacking in certain soils of low productivity." *Technical Bulletin No.* 188, New York State Agricultural Experiment Station, Cornell University, July, 1928.

Memorial Medal awarded to Carnation Spectrum.—It is announced in the Annual Report of the American Carnation Society that, as a result of the poll of its members, the Marcellus Adams Patten Memorial Medal, conditions covering the award of which were announced in our issue for December 29, 1928 (p. 502), has been awarded to Carnation Spectrum. Betty Lou was a close second, and Winsome, third.

Land for Afforestation in North Wicklow.—In the *Economic Proceedings of the Royal Dublin Society*, Vol. II, No. 23, appears an interesting article dealing with the survey of the waste land of North County Wicklow suitable for afforestation, by S. Leonard, B.Sc. The objects of this survey were to find out what land, if any, is suitable for afforestation in North County Wicklow. No attempt was made to enquire into the feasibility of acquiring such land, as this would be the work of the Forestry Section. One general conclusion arrived at from this survey is—that the amount of land available for afforestation in Ireland is much less than is generally supposed. North County Wicklow may be taken as being fairly typical of the mountain districts in Ireland, and it has been found that land suited to afforestation and situated in blocks of a convenient size for management, totalled in all 11,900 acres. This is equal to six per cent. of the total area, or eleven per cent. of the waste land. The total of waste land in the north of County Wicklow amounts to 104,000 acres, of which the larger part is wild and exposed, with peaty or otherwise infertile soil. The portion dealt with in detail consists of land which it is considered would be favourable to tree growth. It has been shown that there are fourteen blocks, in most cases over three hundred acres in extent, which are at the present time in a state of unproductivity, or of very low agricultural value. It is urged that if this land was included in some scheme of afforestation, its value would be increased materially. There are, in addition, many small areas of waste land not dealt with specifically, which, if planted as shelter belts, would afford much-needed shelter for the agricultural land in the vicinity.

Carnations in Public Parks.—The Association of Parks and Botanic Gardens Superintendents (London Branch) will meet in the R.H.S. Lecture Hall, Vincent Square, on Tuesday, February 26, when Mr. Montagu C. Allwood will lecture on "Modern Carnations and their Use in the Public Parks," and will illustrate his lecture by lantern slides. The chair will be taken by Mr. A. J. Ashmore at 7 p.m. prompt.

Lecture by Mr. Cecil H. Hooper, F.L.S.—On the evening of February 11, Mr. Cecil H. Hooper, F.L.S., of the South-Eastern Agricultural Institute, Wye, read a paper entitled "Fruit Pollination in Relation to Commercial Fruit-growing," before members of the Royal Society of Arts, at the Society's headquarters in John Street, Adelphi, London, W.C.2. Mr. H. V. Taylor, Commissioner of Horticulture, Ministry of Agriculture, presided, and there was a large attendance of members and others, among them being several prominent horticulturists. Mr. Hooper dealt with his subject in a comprehensive manner, illustrating it with numerous excellent lantern slides. He touched upon the various methods of securing pollination employed by fruits of commercial importance, and then gave, in detail, the results that had been obtained in experiments connected with insect pollination, and self- and cross-fertilisation, of Apples, Pears, Plums, Cherries, etc., dealing with each in turn. Among points which Mr. Hooper emphasised in concluding his paper were: (1) If wild insects are not sufficient to effect good pollination of the crop, hive bees should be introduced to the plantation; (2) when planting an orchard, choose two or more varieties that flower at the same time, and, in the case of Cherries, avoid planting together varieties that are inter-sterile; and (3) where established plantations of fruit trees consist of only one variety, interplant or re-graft one tree in nine with another sort, in order to secure cross-pollination.

M. Firmin Lambeau.—One of the foremost amateur gardeners in Belgium, M. Firmin Lambeau, is keenly interested in all phases of gardening, but has become famous chiefly because of his fine and admirably cultivated collection of Orchids. He began to form this collection in 1900 by purchasing plants from M. Lucien Linden, of Brussels, whose nursery provided the foundation of so many excellent Belgian and French collections. In 1912, M. Lambeau transferred his Orchids from Square Vergote, Brussels, to his present estate at Chateau du Vogelsang, Woluwé, St. Pierre, in the suburbs of Brussels, where, near the Parc du Cinquantenaire, he has an extensive garden, beautifully laid out and planted with choice trees and shrubs, and comprehensive collections of hardy perennial and alpine plants, with a lake for aquatics. Here he has a fine range of fifteen glasshouses devoted to Orchids of all kinds, represented by the choicest hybrids. Two houses, each one hundred feet long, are devoted to Cypripediums that include most of the finest British and continental hybrids. On December 19 last, he exhibited a splendid group at Brussels (Fig. 66) and this contained Cypripedium Chrysostum var. H. G. Elwes, C. Gwen Hanner, Chadwar var., C. Imperator var. Vogelsang, C. Chardmoore var. Duchess of York, C. Crusader, C. Britain's Monarch, C. Corsair, Holford's variety, C. Cappa-Magna, C. Draco var. Vogelsang, C. Minotaur, Westonbirt variety, C. Nirvana, C. Primrose, C. The Warrior, and many other first-rate sorts, in addition to several of his own raising, notably C. Lucini var. dulcis, C. Memoria Lucini and C. Madame de Lazio var. Roi Albert. But Cypripediums are not the only claimants upon M. Lambeau's affections, as witness the fact that other kinds bear his name, *i.e.*, Odontioda Lambeauiana, Odontoglossum Lambeauianum, Miltonia Lambeauiana, Laelio-Cattleya Firmin, C. gigas alba var. Firmin Lambeau—which obtained a Gold Medal in London—while Miltonia Bleuana var. Reine Elizabeth was raised at the Chateau du Vogelsang. M. Lambeau has not been selfish in his affections for Orchids, for he has exhibited at most of the international exhibitions at St. Petersburg, Paris and Berlin, and has on four occasions, 1908, 1913, 1923 and 1928, won the Prix du Roi at the famous Ghent Floralies—a splendid record. As President of the Brussels Tribunal de Commerce, M. Lambeau is a busy man, therefore those who would find him among his Orchids should arrange their visit for a Saturday afternoon. But M. Lambeau is busy in other directions, encouraging the cultivation of Orchids in particular and of horticulture in general, for he is President of the Linnean Society of Brussels, of the Cercle des Orchidophiles Belges, of Les Amis du Pois de Senteur, and of the Brussels Horticultural Society, besides being a member of the Conseil Supérieur de l'Horticulture, the Council of the Brussels Botanic Gardens, and of the State School of Horticulture at Vilvorde. M. Lambeau recently lost, by death, his gardener, M. Ed. de Munter, who had been in charge of the garden for a long period; his place has been taken by M. Guillaume Heylen, who also has been in M. Lambeau's service many years. We congratulate M. Firmin Lambeau on his continued and active interest in horticultural matters, and find it a pleasure to present his portrait to our readers and illustrate a part of one of his displays of splendid Cypripediums.

M. FIRMIN LAMBEAU.

Retirement of Mr. J. Edmonds.—Mr. John Edmonds has just retired from the charge of Bestwood Gardens, Arnold, Nottinghamshire, after fifty-eight years' service under two Dukes of St. Albans. He is held in great respect by the family he has served so long and ably, and, although over eighty years of age, is very active, his only trouble of late years being deafness. Many years ago, in the days of Messrs. Goodacre and McIndoe, he was an exhibitor of fruit and groups of plants at the leading shows in the midlands and north of England. For many years he had charge of the woods, etc., at Bestwood, in addition to the gardens. His address now is Redhill Farm, Bestwood, Arnold, Nottinghamshire.

Flowering Plants of South Africa.—The plants described in the recently issued No. 31 of Vol. VIII (July, 1928), of *The Flowering Plants of South Africa* are:—Moraea Balenii (t. 301), Bonatea cassidea (t. 302), Aloe laxiflora (t. 303), Eulophia calanthoides (t. 304), Virgilia capensis (t. 305), Homeria Cookii (t. 306), Eulophia purpurascens (t. 307), Disperis Fanniniae (t. 308), Antholyza aethiopica (t. 309), and Holothrix Thodei (A) and H. confusa (B) (t. 310). Moraea Balenii is a handsome species from east Griqualand, whose yellow, Iris-like flowers resemble those of M. spathacea, from which it differs, however, in having narrower, whip-like leaves which are strongly convolute. In this country this species, together with other members of the genus, should succeed in a warm, well-drained border with a southern aspect, although it would be advisable to lift and store the corms for the winter. Of no especial attractiveness, although undoubtedly quaint in appearance, is Bonatea cassidea, of the Order Orchidaceae. The genus Bonatea is indigenous to Africa and contains about nineteen species, of which eight are found in extra-tropical South Africa. They are all tuberous-rooted, terrestrial herbs, with leafy stems ranging from six inches to three feet in height, terminated with racemes of green and white flowers. Bonatea cassidea is among the slenderest and smallest-flowered of the species. Aloe laxiflora (see *Gard. Chron.*, Vol. XXXIX, p. 130), is found in the Cape Province. It was first collected by Mr. F. G. Griffiths near Port Elizabeth. He sent living material of it to Kew, where it flowered in 1902. Its slender, tubular flowers are scarlet, yellow towards the tip, and are produced in lax racemes. Eulophia calanthoides (Orchidaceae, Tribe Vandeae), is found in Natal, Orange Free State and Transvaal, and is closely related to E. acuminata and E. Allisonii. The flowers are borne in loose racemes and are, according to the illustration, creamy-white, the lip being shaded at its base with purple. Virgilia capensis is an attractive, Leguminous, tall shrub or tree, abundant in the south-western districts of the Cape Province, where it is popularly known as Keurboom; its petioled flowers are more or less magenta-coloured, becoming paler with age, and are borne in lateral racemes. Homeria Cookii, Natural Order Iridaceae, is a greenish-yellow-flowered species closely allied to H. pallida; it was collected by Mr. F. J. Cook in Concordia Valley, Montagu Division, in October, 1922. Of dainty and attractive appearance is Eulophia purpurascens, found in Natal and the Cape Province, its rather small, purple flowers being produced in erect, terminal racemes, each containing eight or nine flowers. Disperis Fanniniae is another South African Orchid. It belongs to the Ophrydeae section, and is described as growing naturally in leafy-loam in the shade of other plants. It has large-hooded flowers, the hoods being white, spotted with purple, while the small lip is sharply reflexed. Antholyza aethiopica is well-known in English gardens as a coarse-growing member of the Order Iridaceae, which, in general appearance, closely resembles the Montbretia. It is too leafy and sparse in the production of its flowers ever to become popular. Holothrix Thodei and H. confusa are two other Orchids of the section Ophrydeae, of botanical, rather than garden interest, for their flowers are insignificant and by no means attractive.

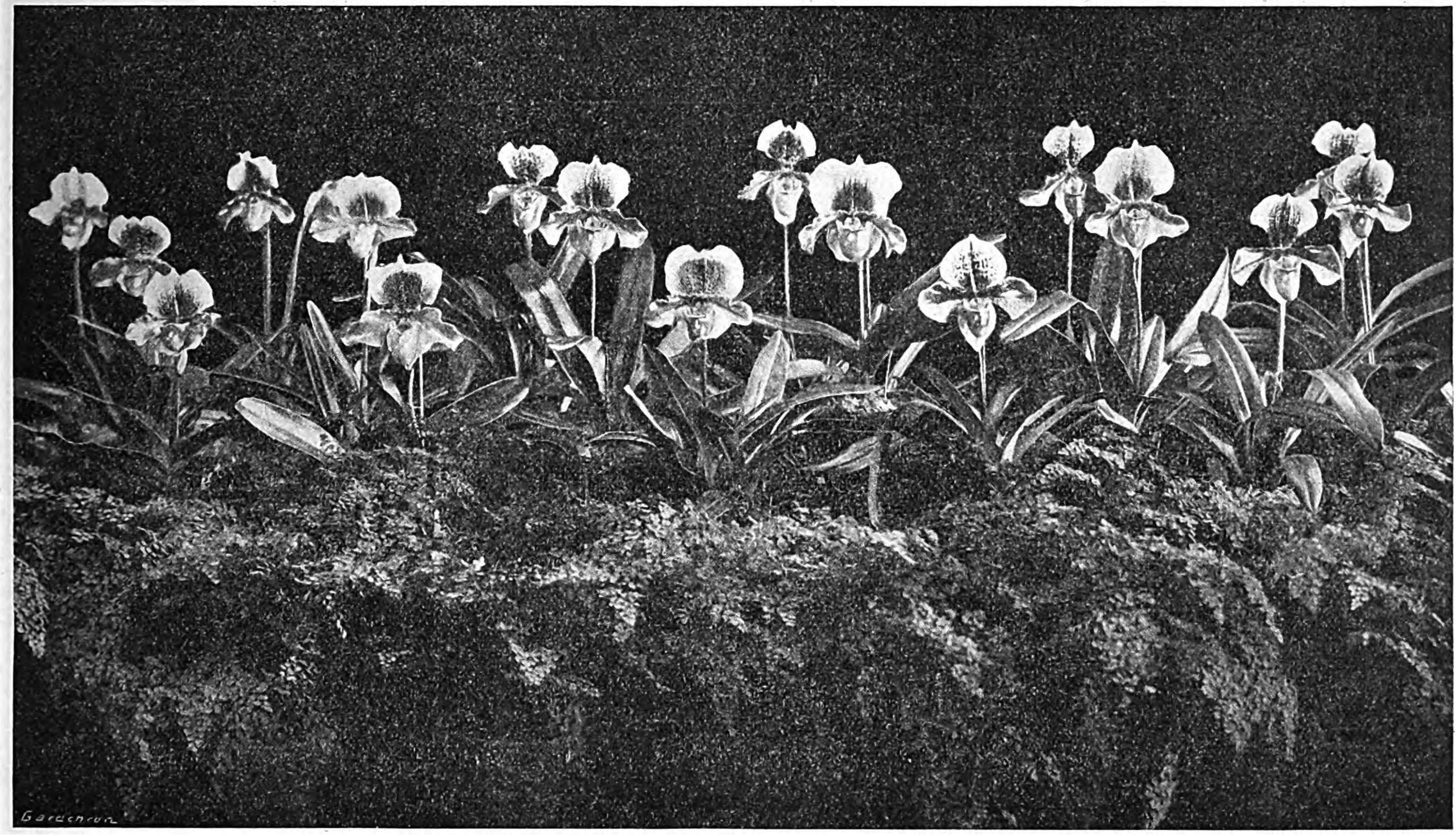

FIG. 66.—COLLECTION OF RARE HYBRID CYPRIPEDIUMS EXHIBITED IN BRUSSELS BY M. FIRMIN LAMBEAU.

Colonial Appointments. — The following appointments are announced as having been made by the Secretary of State for the Colonies: Mr. G. F. Clay, M.C., B.Sc. (Geneticist, Amani Institute), to be Senior Agricultural Officer, Uganda; Mr. D. Thornton, D.Sc., Mr. F. E. Buckley, A.R.C.S., Mr. K. D. R. Davis, B.A., and Mr. C. B. Taylor, Superintendents, Agricultural Department, Nigeria; Mr. T. H. Nicol, B.Sc., Agricultural Instructor, Sultan Idris College, Federated Malay States; Mr. J. L. Greig, B.Sc., Assistant Agriculturist, Federated Malay States; Mr. E. J. H. Corner, B.A., Assistant Director of Gardens, Straits Settlements; Mr. H. A. Pieris, Divisional Agricultural Officer, Ceylon; Mr. R. H. Cowan, Produce Inspector, Nigeria; Mr. R. M. Maynard, B.Sc., District Agricultural Officer, Tanganyika Territory; and Mr. H. B. Waters, B.A. (Deputy Assistant, Director of Agriculture, Nigeria), Deputy Director of Agriculture, Gold Coast. It is also announced that Mr. F. A. Stockdale, C.B.E., Director of Agriculture, Ceylon, has been appointed Assistant Agricultural Advisor to the Secretary of State for the Colonies.

A New Disease of Chrysanthemums.—At a meeting of the Glasgow and West of Scotland Horticultural Society, on Wednesday of the past week, Mr. Hugh MacSkimming, Auchenault Gardens, Helensburgh, described the symptoms of a disease which he had discovered in stocks of early- and late-flowering Chrysanthemums. When the plants are making splendid growth, the leaves curl close to the stem, then the plants shoot up and develop normal leaves, but the buds generally go blind. In the following year the stems become hard and the leaves small. As showing the injurious effect of this trouble he mentioned an instance of a batch of plants in their second year which hardly carried a flower. Affected plants have been sent to the East of Scotland Agricultural College at Edinburgh, but, so far, the staff has been unable to diagnose the disease, but it was suggested that it might be caused by an absence of potash, or by a Mosaic disease. In Mr. MacSkimming's opinion, the disease was likely to be a serious menace to the Chrysanthemum, as many of the stocks in the country had become infected before the trouble was recognised.

Venidium fastuosum.—The many readers who have written to us and to Mr. Hay, asking where seeds can be obtained of Venidium fastuosum—the subject of our coloured plate on February 2—will be glad to learn that Messrs. Ryder and Son, Ltd., St. Albans, secured a "fair quantity of seeds, which, unfortunately, arrived too late for inclusion in the 1929 catalogue." These seeds the St. Albans' firm is advertising in the present issue.

Appointments for the Ensuing Week. — Monday, February 25: East Anglian Institute of Agriculture's lecture; Birmingham and Midland Gardeners' Association's lecture. Tuesday, February 26: Royal Horticultural Society's Committees meet, and Annual Meeting; Royal West Renfrewshire Horticultural Society's meeting. Wednesday, February 27: Newcastle and District Horticultural Society's meeting. Friday, March 1: Manchester and North of England Orchid Society's exhibition; Dundee Horticultural Society's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Storing Apples in dry Sawdust.*—I have a dark closet in my house, or, rather, I live in a row with windows back and front. The house is four stories high, and the length from front to back is so great, that we have three rooms on a floor, the centre one dark. On the third storey the floors are plaster, and I find the temperature so even that I use it for a wine store in preference to the cellar, and have it fitted with bins. In this room I put some hampers of Apples (like Pearmain). I wanted one of the hampers, and turned the Apples on one of the bins, amongst the dry sawdust (Pine sawdust). A fortnight ago we looked at them, having used up the others gathered at the same time and from the same tree, all of which were much wrinkled, but on taking those off and from amongst the sawdust, I found them in a most beautiful condition; those covered with sawdust were as plump and fresh as when gathered, while those partially buried were only so to the extent covered with the sawdust, the upper portions being wrinkled. I am so pleased with the discovery that I shall pack them in bins next year, for I have no doubt they will keep in this way until next Christmas.—*Anon. Gard. Chron., February* 25, 1854.

Publications Received.—*Agricultural Entomology*, by D. H. Robinson, B.Sc., and S. G. Jary, B.A.; Messrs. Gerald Duckworth and Co., Ltd., 3, Henrietta Street, W.C.2., price 15/- net.—*Seed Trade Buyers' Guide*; The Seed World Chicago; price $1.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE, Manchester.

Trichopilias.—The Almond-scented Trichopilia fragrans thrives in the moist conditions of the cool house, in a position where all the available sunlight reaches the plants at this season; robust specimens often produce two crops of flowers during the year Flower scapes are now developing from the base of the pseudo-bulbs and, although this species and its variety nobilis require more moisture at the roots at this season than any of the other species generally cultivated, great care is needed when affording the water to prevent any coming in contact with the flower scapes, or they will decay quickly. This caution also applies to many of the other species when they reach this particular stage, notably, the free-flowering T. crispa; the brightly-coloured T. coccinea; the large-lipped, Hawthorn-scented T. suavis; the chaste T. Backhousiana, and the beautiful hybrid T. Gouldii; all of which are now in a partial-resting condition, in a light position at the cool end of the intermediate house, where they only require small quantities of water at the roots at fairly long intervals. Too much moisture at this stage will cause the roots to decay, and the black spot disease to develop on the pseudo-bulbs and foliage. Later in the season these Trichopilias will produce flower scapes from the bases of the pseudo-bulbs, and a gradually increased supply of water will be needed each time the compost becomes dry, applying it chiefly around the inner edge of the receptacle until the flower-stems are well advanced. Many kinds have decumbent flower spikes which are seen to advantage when the plants are suspended from the roof. After the flowering period growth becomes active, and fresh roots are produced as the young growths advance; at this stage any necessary repotting may be done, using well-drained pans and a rooting medium of three parts Osmunda-fibre and one part chopped Sphagnum-moss, adding broken charcoal to keep it open. Careful watering is necessary until the roots are well established in the new compost, after which ample supplies are required each time the soil appears fairly dry until growth is complete, when a less quantity will suffice. The plants thrive in a light position, but require shading from strong, direct sunshine, which soon affects the foliage, turning it a very unhealthy yellow.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Early Peaches.—The earliest Peach trees, on which the fruits are beginning to swell freely, should be syringed well with tepid water twice a day when the weather is fine, and once when it is cold and cloudy. As Peaches should receive no water at the roots during the flowering stage, a liberal supply should be given at a temperature of 70° to inside borders so soon as the fruits have attained the size of small Peas and the trees are forward enough for disbudding. This latter operation should be regulated by the vigour or weakness of the trees and the crops of fruits they are carrying. If the trees are in vigorous growth, the young shoots may be removed with a liberal hand, but not to such an extent that growth will be checked, while weak trees should be encouraged to make free growth by delaying the disbudding. Where fruits have set in clusters of two and three, they should be thinned to one, naturally the best, and if there is a good set, all the fruits may be removed from the undersides of the shoots, as those on the upper sides will have the full benefit of the sun and will colour better. Vigorous young trees do not require feeding, in fact they may be seriously injured if stimulants are given at this stage, but old trees which set fruits from every flower and carry heavy crops annually, derive great benefit from applications of diluted liquid manure. If green fly appears, fumigate the house without delay, on a calm, dull afternoon, when the foliage is quite dry. The later trees, which are to provide a succession of fruits to the early ones, and which were started at the beginning of the year, should be kept well supplied with atmospheric moisture, according to outside climatic conditions. Syringing once a day is beneficial, but the old method of keeping the trees constantly moist is detrimental. Green fly should be checked by one or two moderate fumigations as the trees approach the flowering stage, otherwise this pest will mar the trees, and possibly ruin the crop. A temperature of 48° to 50° at night, and 60° to 65° by day from fire heat, should ensure the production of perfect flowers, which should set freely enough, provided the pipes are kept warm and the house ventilated carefully. Although Peaches set freely on walls without the aid of artificial heat, they always do best when bright sun raises the temperature to 70° to 80°, and the atmosphere is moderately charged with moisture, therefore we should endeavour to produce such conditions in our forcing houses by maintaining a brisk, buoyant atmosphere, admitting plenty of fresh air.

Late Peaches.—Late houses, in which the best mid-season and late varieties of Peaches are allowed to come on slowly, should have abundance of air admitted whenever the weather is favourable, not only by day, but also at night. Watering should not be neglected, especially where all the roots are inside and the drainage is good. When retarding can be practised no longer, and the trees begin to open their flowers, syringing on fine, bright days will do them no harm, while fumigation should not be neglected. Fire-heat may be employed to maintain a temperature of 45° to 50° by night, and 60° to 65° by day, to facilitate the setting of the fruits.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Delphiniums.—Few herbaceous plants give so much satisfaction as do Delphiniums. There are many species in cultivation, some being of value for the herbaceous border, but the most important are the tall hybrids in an endless number of varieties and a wide range of colours, from pure white to the palest shades of lavender, and in every shade of blue. The height of the plants and the size of the individual flowers vary considerably. Delphiniums thrive in almost any soil or position, but to obtain the best results they should be afforded generous treatment. The site for them should be trenched deeply, a plentiful supply of well-decayed cow manure being incorporated in the soil as the work proceeds. The choice of position is an important matter; protection from cold, cutting winds in spring should be afforded, as the tender growths are easily damaged. Such a position can usually be secured with a background of shrubs, which enhances the charm of the plants when in bloom. Delphiniums do not resent a certain amount of shade from the midday sun in the south, but should not be grown actually under, or too close to, trees. They should be replanted every three or four years in early spring, as growth commences. Better still, where time permits, a fresh stock should be propagated from single eyes, and now is a good time to carry out this operation. Late summer, after the flowering period, and when secondary growths are appearing, will also be found a suitable time for dividing and replanting. Late-autumn or winter-planting is not advisable, as plants so treated never seem to become established. Delphiniums are most accommodating plants, and can be made to continue in bloom for several months by removing the finished spikes periodically. To secure flowers in late autumn, the first flower spikes should be removed before the seeds have set. Another method is to cut the entire plant to the ground when it has finished flowering, when a supply of young growths will spring from the base; but if this plan is adopted, generous treatment in mulching and watering must be given or the plants will soon become exhausted. On hot, sandy soils, it is always advisable to apply a mulch of well decayed leaf-mould or humus, to keep the ground cool and moist.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Lecturer in Horticulture, Reading University.

Old Apple and Pear Trees.—Trees which are for the most part sound, *i.e.*, with good stems and branches, yet which bear inferior fruits, make suitable subjects for rejuvenation by top-grafting with suitable kinds. These trees should now be headed back to within a foot or so from where it is intended to graft; this will allow for a further cutting back to fresh wood when grafting time arrives. The scions for this purpose should be secured while the buds are still dormant. They should be partly buried in moist soil or sand in some shady position, or on the north side of a wall, as success in grafting largely depends in keeping the scions plump and dormant until required. Trees that are still bearing useful crops may be improved, and, indeed, made profitable, by a judicious thinning of the branches. Where this operation has been neglected for some years, the thinning should be spread over two or three years, to lessen the risk of checking the tree, and avoid the production of sappy shoots. Crowded branches, and those which cross others, should be cut clean out at the base, the cut surface being trimmed with a sharp knife and covered with paint, grey-green for preference. The trees should then receive a good cleansing wash, such as caustic alkali, if they are infested with lichen or mosses. If they are comparatively clean, a good lime-wash is to be preferred. This wash should be made from the best lime shell, 25 lbs. to 28 lbs. to fifteen gallons of water, and put on, while hot, with a very coarse nozzle. The lime shells should be placed in a wooden tub, capable of holding fifteen gallons, and sprinkled with just enough water to make it turn to powder. If the tub is covered with a sack, the operation will be hastened. The water should then be added to the powder, five gallons at a time, and stirred briskly and continuously. When transferring the solution to the sprayer, run it through coarse sacking to remove any grit which may choke the nozzle. Apply it to the trees at once, paying particular attention to the twigs where the eggs of aphis and other insects are deposited.

American Gooseberry Mildew.—Where there is any suspicion of this disease the Gooseberry bushes should be sprayed with a dilute lime-sulphur wash, about one in twenty, making certain that every portion of the wood is thoroughly wetted with the wash.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hatfield, Hertfordshire.

Clerodendrons.—Specimen plants of Clerodendron Thomsonae and C. splendens speciosissima will now require attention with regard to top-dressing with fresh rooting material. The old soil should be removed carefully with a pointed stick, care being taken not to injure the roots, and before applying the new compost, see that the drainage is in perfect order. The top-dressing material which, when applied, should be made fairly firm, may consist of good turfy loam, leaf-mould, and a little peat, with a good quantity of silver sand added. Young plants of C. Thomsonae that were propagated last spring should now be transferred to larger receptacles, and if their growths are trained over wire frames they make attractive pot plants either for the dwelling house or the conservatory, for they remain in flower over a long period

Bouvardias.—Where it is desired to increase the stock of Bouvardias, some of the old stock plants should be pruned lightly and afforded a temperature of 55° to 60°, when they will soon start into growth, the young shoots being secured as cuttings when from three to four inches in length, placing them near the margins of small pots filled with an open compost, in a close frame. Bouvardia cuttings are somewhat slow-rooting, but if treated in this way no difficulty should be experienced. They are increased readily by means of root cuttings. For this purpose some of the strongest plants should be shaken out of their pots, the thickest roots being secured and cut into pieces about one inch in length, which should then be dibbled into pots of sandy soil and placed in a close frame. There are certain varieties which do not come true from root cuttings, but in most instances a good proportion of plants true to type is secured. White fly is a troublesome pest of Bouvardias, and unless kept in check, success in the cultivation of these subjects cannot be assured.

Coleuses.—Seeds of Coleus may be sown now, while cuttings from well tried varieties that have been kept as stock plants through the winter may also be inserted. Coleus cuttings root very quickly in a warm atmosphere if lightly shaded. Coleuses are rapid growers, therefore, to obtain the best results, they should never be allowed to become pot-bound until they are in their final pots, at which stage liquid manure should be applied frequently.

Gardenias.—Specimen Gardenias that are commencing to bloom should have all side-growths removed, and should be fed liberally with liquid manure. Gardenias are gross feeders, and to obtain flowers of good quality frequent applications of manure in some form are necessary. Young plants should be potted on to provide a succession of blooms, while cuttings may be inserted to secure a stock of young plants. The cuttings, if possible, should be of good, stout, basal growths, about three to four inches in length. They should be inserted around the sides of small pots filled with a mixture of loam, peat and sharp sand, and placed in a propagating frame.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder,
Knowle Gardens, Dunster, Somerset.

Early Potatos.—If narrow borders along the fronts of glasshouses are available, these form ideal situations in which to grow early Potatos. The borders need to be only twenty inches wide, the Potato sets being planted six to eight inches from the wall. Pieces of tiffany along the front of the borders will protect the Potatos from slight frosts. Potatos grown in situations such as these will produce tubers quite early in the season. More "seed" Potatos should be placed in boxes for sprouting, in a house a few degrees warmer than the store-room.

Lettuces.—Plants that have been wintered in the seed-bed will now be ready for planting out in warm borders with a south aspect. They do not require so much room between the lines as the summer varieties, as they do not attain such large dimensions.

Peas.—More Pea seeds may be sown in a south border. Fork the ground lightly on a dry, sunny day, so that the surface will dry; sowings should now be made every week to maintain a successional supply of Peas. Later and taller varieties of Peas should be sown in trenches, into the bottom of which plenty of manure should be placed.

Spinach.—So soon as the ground is in suitable condition, seeds of the round-leaved Victoria variety may be sown in a south border. The surface of the Spinach Beet bed should be hoed or loosened with a cultivator, as this vegetable will soon be restarting into growth.

Parsnips.—Some growers prefer to sow this crop in February, others in March, but much depends on the type of ground. If the ground is light, Parsnip seeds may be sown now with every prospect of good germination. The ground cannot be cultivated too much for Parsnips; it should be forked deeply and the surface broken down to a fine tilth previous to sowing the seeds.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq.,
Rosemount, Monkton, Ayrshire.

General Work.—Now that pruning is finished and most of the prunings and other vegetable refuse have been collected, an attempt should be made during frosty or wet weather to turn such into useful material for returning to the ground in due course. All vegetable refuse should be placed in a heap where it will not be too much in evidence, and allowed to rot; it makes a first-class manure for mixing with the soil or applying as a top-dressing. All woody matter, diseased vegetables, or those affected by club root, maggot or such like, should be burned. This is quite a simple process if a few pieces of heavy wood, or tree roots, can be secured. Place them in a circle, touching each other, and kindle a fire in the centre, feeding it until a good body of glowing ash has resulted; this will kindle the circle of wood and, if covered in carefully, will burn for days, or even weeks, provided the heat is not allowed to escape. Cover any holes which may develop and when it has burned out cover the ash or remove it to a shed, where it can be kept dry. A good sprinkling of this ash, if applied dry, is of great assistance in preparing the ground for small seeds; it may be used as a top-dressing in the fruit quarters, and is useful as a dressing for Potato ground. It has a beneficial effect on heavy ground, and is a valuable source of potash.

Maincrop Onions.—This crop should be sown so soon as the soil is in a suitable condition, that is, when it is dry on the surface. If the Onion bulbs are to keep well, the whole supply of food should be in the ground prior to sowing the seeds, whether it is from natural or artificial manure. A good tilth should be secured, and the soil firmed before sowing the seeds in shallow drills one foot apart. The seeds should be sown very thinly, a quarter-of-an-ounce to thirty yards being ample; they should be covered with a little fine soil, if the land is of a clayey nature, or the natural soil if otherwise, and the rows trodden to complete the operation. If sown in this way, no thinning of the seedlings will be necessary, therefore the danger of attack by the Onion fly will be lessened.

Autumn-sown Sweet Peas.—These have been making rather weakly growth owing to lack of light, but should soon respond to the lengthening of the days and increase of sunshine, if we are so favoured. Keep them near the glass, whether in frames or a cool house, and provide them with support in the form of short twigs, so that good, sturdy plants may be had either for flowering in pots or for planting out-of-doors.

Hydrangeas.—These should now be taken from the frames where they have been wintered and placed in a cool house. Remove any loose surface soil and top-dress them with some good, rich compost. In a few weeks they may be placed in a moderate temperature to force them into growth. As growth advances, feed them once or twice a week with liquid manure, or give dressings of a good fertiliser, such as Clay's, at intervals.

Chrysanthemums.—The cuttings intended to provide plants for late-flowering, if rooted in boxes, should not be allowed to remain crowded. Pot them singly and keep them in close and warm conditions for a few days, afterwards cooling them off gradually to normal conditions. I prefer to put them singly into small two-inch pots at the present time, potting them on into larger receptacles as they require it, and I find I get as many flowers from one, as from three plants grown together in a pot, except in the case of varieties which do not "break" readily, and most large-flowered Singles. The compost should be light and rich, consisting of two-parts loam, one part leaf-soil, and one part well decayed horse or cow manure, with plenty of sand, and a little powdered charcoal and lime-rubble added. Do not pot them too firmly and after potting water them gently.

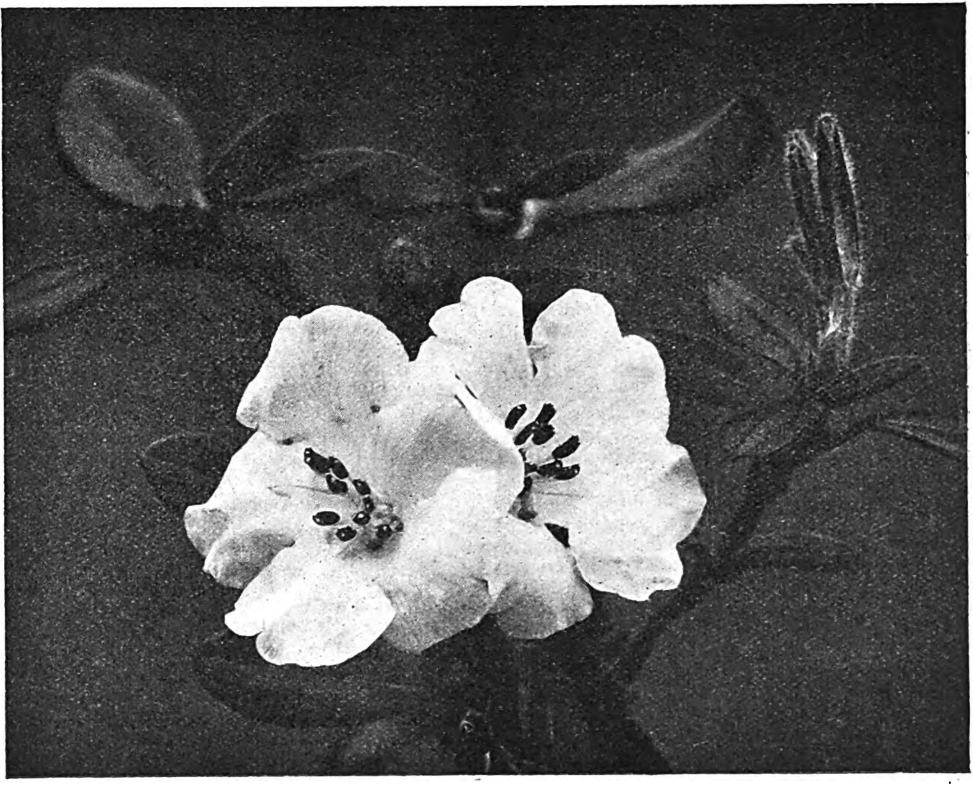

FIG. 67.—RHODODENDRON SP., K.W. 6,273.

R.H.S. Award of Merit, February 12. Flowers milky-white. Shown by Lionel de Rothschild, Esq. (gr. Mr. A. Bedford), Exbury, Southampton. (see p. 128.)

ALPINE GARDEN.

MOLTKIA PETRAEA.

Also known as Lithospermum petraea, this is a charming little shrub for a really hot, sunny place in the rock garden. It comes from the Grecian Alps and, although introduced over a century ago, has never been common in gardens. This is probably due to the fact that it is not so hardy as one would wish it to be. But dampness is more detrimental to its welfare than frost, and it will often live for many years, even where the climate is anything but genial, provided it has a roothold in poor, rocky soil—thus ensuring sharp drainage—and full sun.

M. petraea makes a neat bush of from one to two feet in height, its grey-green, narrow leaves, which are evergreen, suggesting a small Lavender bush. Towards the end of May, the tips of the shoots become studded with rosy-purple buds, these developing into clusters of tubular flowers in a pleasing shade of violet. As these blooms open in succession, the period of blossoming lasts for several weeks. Propagation by cuttings is not difficult, and as growth is generally slow, and the permanence of old plants by no means assured, it is well always to have a few young ones to hand. *J.*

SEDUM MIDDENDORFFIANUM.

Among the Sedums which are sufficiently distinct to merit being planted freely on the rock garden is S. Middendorffianum, whose chief charm lies in the rich colouring of its foliage. although when in blossom it is also very effective, for the flowers, produced in flattened terminal clusters during July, are bright golden-yellow, with dark purple anthers.

The late Mr. Reginald Farrer, in his *English Rock Garden,* did not do justice to this Sedum when he described it as "lying about on weakly shoots of six inches or so," for in my experience of it, the growths are closely packed, and form bushy clumps, never sprawling or untidy in appearance, and when a number of plants are grouped in a bed, in the hottest and sunniest position, in soil that is light and not too rich, they soon grow together and form a close carpet. which in summer is converted into a sheet of gold.

But, as stated previously, it is not the flowers which form the chief charm of this Stonecrop, but the foliage, which, provided the plants are grown in a warm position, and in soil not so rich as to encourage vigorous growth, is always tinged with bronze, the colouring being accentuated as the season advances until, by autumn, the plants are burnished masses. Some authorities give an autumn-colouring variety, under the name S. M. var. hybridus, although it is doubtful whether this distinction is justified, as the colouring seems to be a fairly general character, being evident also in the variety minor, which is dwarfer than the type in all its parts.

PUTORIA CALABRICA.

Although, perhaps, this comparatively rare subject is best grown in the alpine house, it will, if planted in suitable conditions, last for a number of years in the open rock garden and form a bushy little plant some nine or ten inches in height.

And it is certainly worth while endeavouring to coax it into establishing itself, for it is a plant of rare charm ; it should be planted in a warm and sheltered position—it comes from the sunny cliffs of Spain and Greece—in light loam, and is most likely to succeed if planted in a horizontal crevice of a cliff, with a slightly projecting rock above to shed off the rain. In winter, the shelter afforded by a sheet of glass placed above it will also be beneficial, as it is winter wetness which is chiefly responsible for its decease.

Its branched growths are covered with soft down and furnished with narrow, shining leaves. The flowers are produced intermittently, but never very profusely, throughout the summer months ; they are small, wax-like trumpets of a clear rosy-pink, and in appearance are very similar to those of Daphnes, although they lack the fragrance associated with the latter genus, in fact, they are—an unfortunate trait in blooms of otherwise such excellent charm—of a rather unpleasant odour, a fact indicated by the generic name, the root of which is *putor*, meaning, a strong smell. However, this fact alone is not sufficient to justify its banishment from the garden.

If P. calabrica fails in the open garden—failures with it are more numerous than successes—then it might be included in the alpine house collection, for plants may be secured by inserting cuttings in pure sand in a cold frame during the summer. It is not among the easiest of subjects to propagate, but a reasonable proportion of the cuttings should root if tended carefully and not kept too moist, and these, if potted in a light and open compost, may be wintered in a cold frame or alpine house.

It is stated that Putoria calabrica produces black berries in succession to its beautiful flowers, but I do not know if this is true of it in this country. *W.*

OURISIA MACROPHYLLA.

To my surprise, I find that Farrer dismissed this charming plant with a few words, for I looked it up in his *English Rock Garden,* anticipating a fascinating pen-picture of it, but he had very little to say about it. It was such a handsome subject in my sandstone rock garden last year that I longed for the genius of a Farrer or an A. T. Johnson to fittingly describe it.

Like many another graceful plant now becoming established in our gardens, it is a New Zealander and apparently quite hardy, having withstood 23° in a north-facing rockery for two years in succession.

O. macrophylla is slightly rhizomatous, although not so markedly so as O. coccinea, and forms spreading clumps and mats of handsome, rather hairy leaves, some two to two-and-a-half inches long ; these are of a darkish green, with effective veins and blotches of deep purple, ovate in shape, and decidedly toothed. Rather late in the summer, the six- to nine-inch stems appear, bearing, sometimes in whorls, although more often in a few-flowered umbel, the handsome flowers, almost reminiscent of a Pentstemon, but not quite so tubular, and with a wider mouth, and a pendant lower lip ; the whole flower is white, with beautiful, deep violet veins and blotches.

In Bailey's *Cyclopedia of Horticulture* it is described as attaining two feet in height, with leaves up to five inches in length ; it may possibly achieve these dimensions in its native habitat, but in this country I have never seen it exceed the size I have mentioned, and so I hope it will remain, for I can quite imagine that, despite its present beauty, which no one could possibly deny, it might easily gather coarseness with size.

It is best planted in half-shade, in the shelter of a rock, in deep, cool soil with plenty of broken stones around the crown. Thus situated it will thrive and increase in size and beauty from year to year. Propagation is readily effected by division and seeds. *Will Ingwersen, The Birch, Sharpthorne, Sussex.*

BULB GARDEN.

LILIUM PHILIPPINENSE VAR. FORMOSANUM.

The illustrations of this fine Lily in a recent issue (Fig. 32, 33 and 34 ; pp. 62, 63 and 64), draw attention to its noble proportions. There are two forms in cultivation. The first I grew was the dwarfer form and quicker-growing, flowering in fifteen months from seed-sowing, or earlier, when about nine inches high. In later years, the type figured has become more general in cultivation. It possesses a remarkable characteristic, *i.e.*, its slow growth. I know of no other Lily that cannot be brought into active growth under glass, but this variety will not be hastened. I was at Lochinch in July of last year and saw colonies of Lilium philippinense var. formosanum not more than two feet high, with thick stems and luxuriant foliage, in perfect health. Yet it was not until November they flowered. If it is grown under glass all the summer it will not be hurried. L. auratum and L. regale will grow inches in a week, but with L. philippinense var. formosanum a few inches in a month is more the pace. Is it because it is found at high altitudes ? As a foliage plant it is strikingly beautiful, and planted out in a cool house greatly rewards its owner with magnificent heads of blooms in the autumn.

I spent a glorious three days in late July of last year at Monreith, Castle Kennedy and Logan, and was fortunate to find the owners in every case at home. I deemed myself very lucky, and wish I could write of the charm of Monreith and its cultured owner, of the glories of Lochinch, and of the bewildering multitude of interesting plants at Logan. I doubt if three such outstanding owners and gardens could be found in any other similar area in the British Isles. *R. W. Wallace.*

HARDY FLOWER BORDER.

MONARDAS.

The Monardas comprise a small family of handsome, herbaceous perennials, well suited for planting in herbaceous borders or for naturalising in the wild garden, and are among the easiest of hardy plants to grow. Natives of North America, the various species, and especially the scarlet-flowered Monarda didyma, brighten the woodlands and stream margins of their native land during the summer and autumn ; M. didyma is, in fact, one of the brightest-flowered among the many attractive wild plants of North America. Although so small a genus, the nomenclature of the Monardas is very confused, chiefly on account of the great variability of M. fistulosa, which has numerous forms, each of which has been raised by various botanists to specific rank.

The most popular and best-known species is, of course, M. didyma, commonly known as the Oswego Tea, a name derived from the fact that its foliage has, at times, been used as a substitute for Tea. This species is also often erroneously termed the Bergamot.

It is a free-growing plant, very effective when massed, and growing to about three feet high, its growths, clothed with aromatic foliage, being terminated during July, August and September with dense whorls of gaping, deep red flowers. Although in itself well worth growing, the type has been superseded in gardens by colour forms with flowers of even greater brilliance, foremost among them being the variety Cambridge Scarlet, equally as vigorous and free in growth, but with flowers of a rich and vivid scarlet. This form is now extremely popular and is firmly established in gardens. Then there is the variety Sunset, of comparatively recent introduction and not, as yet, very widely grown, which has closely-packed heads of rich, reddish-purple blooms. The variety salmonea has large heads of bright flowers in a delicate shade of salmon-pink, and seems better suited for growing in moist places than the others, being especially attractive if planted in masses on the margins of ponds ; like the other Monardas, the best display is secured from this variety if it is lifted and replanted every three years or so, as when so treated it remains fresh and vigorous. The replanting should be done, preferably, during the early spring, as autumn planted clumps do not always establish themselves successfully. There is also a desirable white form, M. d. alba, which might well be given a place in the herbaceous border, if space permits.

Monarda fistulosa, the Wild Bergamot, is, perhaps, best suited for naturalising in the wild garden, unless borders of large dimensions have to be filled. It is, as stated previously, a very variable plant, the colour forms ranging from white, through pink, rose and lilac, to crimson and deep purple, but none is comparable to M. didyma in brilliance of colouring. M. fistulosa will, according to the position afforded it, attain a height of from two feet to five feet, its leaves, borne on angled stems which are typical of the genus, being of firmer texture than those of M. didyma, while the flowers are not produced so freely and are, in the type, purple in colouring. Among its many forms, mention may be made of variety purpurea, with smaller blooms than those of the type, of a rich purplish-crimson; var. rubra, rich rosy-red or crimson; var. media, deep purple; and var. mollis, the flowers of which vary from flesh-pink to lilac.

M. Bradburiana is described as a distinct species by several authorities, its chief distinguishing character being in its flowers, which are light purple, the middle lobe of the lip, which is considerably larger than the lateral ones, being spotted with deeper purple. This is, according to Bailey (*Cyclopedia of Horticulture*), the M. fistulosa flore maculata of *Bot. Mag.*, t, 3,310. It is dwarfer than the preceding species, and is better adapted for growing in moderately dry situations.

Another distinct species, which is sometimes offered by nurserymen, is M. Russelliana, a free-growing sort with pale, pinkish-mauve flowers, veined with purple, and purplish bracts; like the other species, it flowers in late summer and autumn.

The Monardas present no cultural difficulties, for they are easy to establish in any good garden soil, are readily increased by division, and are quite hardy, the fact that they flower late in the season enhancing their value as garden subjects considerably. *M. W.*

INDOOR PLANTS.

APHELANDRA AURANTIACA ROEZLII.

This is, without doubt, the most handsome of all the Aphelandras. The flowers are of a vivid orange-scarlet, borne in terminal, four-sided spikes. The foliage is rather curiously twisted and has wide lines of a silvery hue running through the whole length of their surface, which gives the plant a rather attractive appearance.

Aphelandra aurantiaca Roezlii is a native of Mexico, and in this country requires a moist, stove atmosphere, while in active growth, but should be removed to a somewhat lower temperature when commencing to flower; this will considerably lengthen their period of flowering. Cuttings of fully or half-ripened wood should be taken during the spring and rooted in a medium of loam, leaf-soil and peat, with plenty of coarse silver sand added. If placed in small sixty-sized pots in a propagating pit or case where a brisk bottom heat can be maintained, the cuttings should soon root, and when sufficiently rooted should be potted on into fifty-four-sized pots previous to potting them into six-inch pots in which to flower. The compost should consist of equal parts of fibrous loam, leaf-soil and peat, with a liberal proportion of coarse silver sand added to keep the whole open. They should be grown on without being stopped; by so doing the flower spikes will be much finer and the plants should come into flower much earlier than if they had been stopped.

During the growing season, much benefit will be derived from frequent syringings of tepid water, with occasional applications of weak liquid manure, and doses of weak soot-water about once a fortnight; feeding should be discontinued when the flower spikes show signs of expanding.

By keeping a few of the old stock plants over the winter, fresh batches of cuttings may be struck each year; these will be found more satisfactory than old plants which have been grown on. After flowering, stock plants should be pruned back lightly and given a slight rest until March, when the heat and water supply may be increased gradually to induce them to break into growth and so produce cuttings. *E. Baker, Garston Manor Gardens, near Watford, Herts.*

MUSA ENSETE.

The Abyssinian Banana (Musa Ensete) is found on the mountains of Abyssinia. It is the largest known Banana and is used to a considerable extent for ornamental planting in sub-tropical countries.

The plant is of great importance for food purposes as a vegetable in the damp valleys of Abyssinia. The flower-stalk, before it has emerged from the top of the trunk, is the portion eaten, and it is stated that, when cooked, it possesses a Cabbage-like flavour.

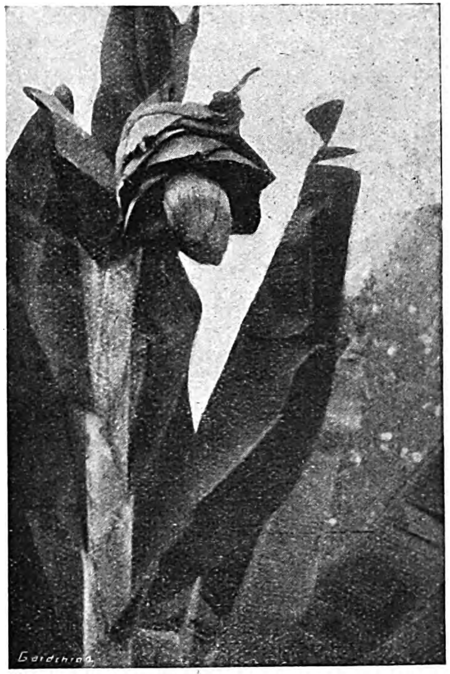

FIG. 68.—MUSA ENSETE FLOWERS SIX DAYS OLD.

Unlike other members of the Musa family it produces no suckers and perishes after fruiting, therefore it is necessary to propagate it from seeds.

The leaves are bright green, with a bright crimson midrib, and the flowers are arranged in clusters of twenty; the perianth is from one-and-a-half-inch to two inches long. The seeds, one to four in number, are an inch broad, black and glossy; they are strung into necklaces by the natives of Abyssinia.

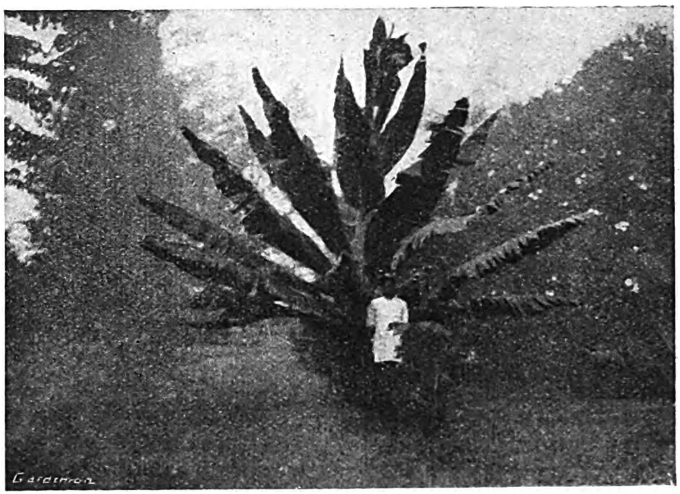

FIG. 69.—MUSA ENSETE IN FLOWER.

According to Sir Joseph Hooker, a few seeds of Musa Ensete ripened in the Palm House at Kew in 1860; the female flowers were specially fertilised with pollen taken from the scarcely opened male flowers.

The accompanying photographs (Figs. 68 and 69) represent a plant eighteen months old. It was sixteen feet high and the flower-stalk eight feet long. The basal leaves were seven feet long and two feet six inches broad, and the inflorescence, consisting of seven "hands," with sixteen fruits to each hand, was two feet six inches long. *F. S., Banfield, Taiping.*

FLOWER GARDEN.

PORTULACAS.

Those who are familiar with the distinct characteristics and appreciate the beauty of these old-fashioned, brilliantly-coloured annuals, have probably noted with interest that they appear to be enjoying a rising degree of popularity and, although one would not advocate the growing of them on a very large scale, they are well worthy of consideration, especially for exposed and dry positions. They can also compete with some of the more aristocratic bedding subjects, however, and visitors to public gardens are not slow in recognising the merits of the genus. They were used on a fairly large scale as a groundwork in bedding schemes on the sea front at Brighton last year with excellent results, and the effect produced was both beautiful and uncommon.

Essentially plants of the sun, requiring warmth and sunlight for their full development, the Portulacas flower most freely in hot, dry summers, but on light, warm soils they never fail to produce beautiful effects. They are all dense in growth and quickly form a bright, green carpet, which, in sunny weather, becomes thickly studded with richly-coloured flowers in various shades. Double and single forms are obtainable, and each type is so beautiful that both may be grown with advantage.

Portulacas do not become exhausted from flowering as in the case of many other subjects, and, however early they come into flower in the summer, they may be depended upon to continue in flower until the end of the season. During periods of dull, rainy weather they naturally become less free in flowering, but so soon as the sun again predominates they regain quickly their old state of brightness, and are frequently in a very attractive state throughout September and October.

Seeds are sometimes sown in the open ground where the plants are intended to flower, and quite good displays of flowers result from this method late in the season, but where they are to be used as part of a summer bedding scheme, it is of prime importance that they should flower early, and for this purpose every effort should be made to obtain, by the end of May, strong specimens which will commence flowering within a very short time of being bedded-out. The raising of plants for this purpose may be accomplished by sowing seeds in a warm house at the beginning of March. So soon as the seedlings are large enough to handle, prick them off into boxes filled with light, sandy soil and grow them on under buoyant atmospheric conditions, fully exposed to sunshine. They do remarkably well in boxes and, if carefully hardened off, they may be transferred to beds at the end of May without receiving any material check. In showery weather they establish themselves almost immediately, but if planted in dry weather, one good watering may be necessary to establish them. Once they have taken root-hold, however, no watering will be necessary or desirable, as few annuals are so well able to resist the effects of heat and drought—a fact which renders them of especial value on dry, sunny banks where few other things would thrive—as are the Portulacas. *W. A.*

PAPAVER RUPIFRAGUM VAR. ATLANTICUM.

If it is rather troublesome in some gardens, since it seeds freely, this Poppy is such a beautiful plant and flowers so profusely the season through that one willingly puts up with its determination to be a successful colonist. A true perennial, P. rupifragum atlanticum makes a low tuft of narrow, downy, pale green leaves, and to a height of some eighteen inches above these it raises elegant flowering stems. These appear in succession throughout the season until late autumn. They branch freely, always stand erect, and bear large, cup-shaped blossoms in a pleasing shade of tawny-orange.

This attractive Poppy is naturalised here, and there are few places in which it will not grow. Although it seeds so abundantly, and is perennial, it is, unlike the Welsh Poppy, for example, quite easily rooted-out where it is not wanted. *North Wales.*

TREES AND SHRUBS.

MYRTUS NUMMULARIA.

This delightful Myrtle is now getting fairly well-known, and every year some fresh evidence as to its hardiness is vouchsafed. Here it came through the severe trial of the winter of 1927-8 without losing a leaf, and it was in a very cold, unprotected spot. M. nummularia is a native of New Zealand. Its slender, wiry growths are quite prostrate, and these, branching freely, cover the ground with a fine, twiggy network, furnished with small, rounded leaves of a dark, lustrous green. The wood also is glossy and the whole plant has a dark, bronzy hue, especially in winter. The pure white, almost stemless flowers appear in early summer, tufting the branches like balls of fluff. These are followed by fruits which are fully one-third-of-an-inch across and almost globular. They are white, or rosy-white, ultimately ripening to a dull scarlet.

I find this very attractive little Myrtle enjoys a cool vegetable soil, and if the moisture supply is at all doubtful, some mid-day shade is desirable. The branches will root if pegged-down, which renders propagation a simple matter. Indeed, the branches often appear to root naturally as the plant spreads. Cuttings also strike very readily. What extent of ground this plant will cover I do not know. It is not a fast grower here, but, given a congenial soil and situation, with shelter from cutting winds, it will not be long in usurping several square feet. *A. T. J.*

BRUCKENTHALIA SPICULIFOLIA.

This is a charming, miniature plant somewhat resembling the common Heather in appearance. When growing in a mass, and covered with flowers, it is very effective, but it is a beautiful subject even in winter, with its closely packed, deep green leaves.

It grows freely in any good sandy loam or peaty soil, making a delightful group in the Heath garden or on the larger rock garden, where it may be used as a carpet for choice bulbs. *R. F.*

MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XIV—The Delei Valley.

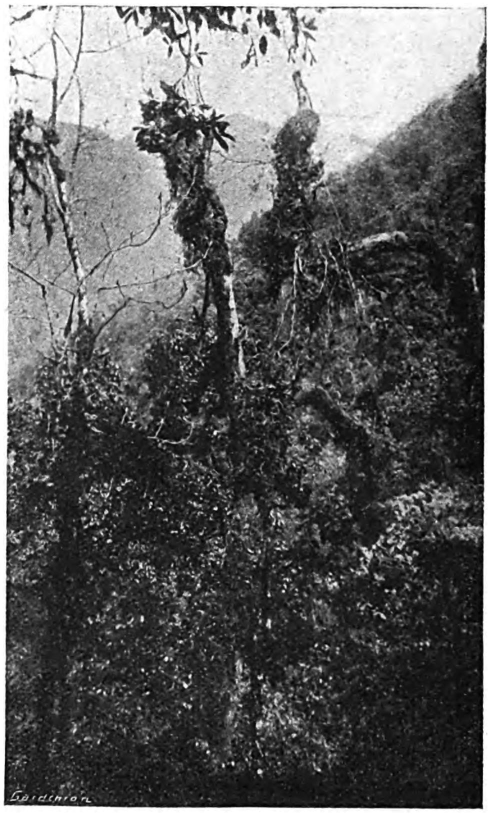

FIG. 70.—TEMPERATE RAIN FOREST: 6,000 FT. ALTITUDE.

The leafless tree on the left is Magnolia rostrata.

The Mishmi path up the Delei valley is difficult from the start. It keeps close to the river, now over boulders in the bed itself, now up and down the cliffs against which the swerving river bangs violently. Only by comparison with the upper Delei can the word 'gorge' be denied to the lower course of the river; and the steepness of the enclosing walls is emphasised by the fact that every side stream leaps the last few hundred feet into the main valley in its stride. The view, both north and south, is blocked out by overlapping spurs and the valley is, of course, lined at the base with tropical or sub-tropical jungle.

In the course of the day's hectic scramble I had no time to botanise, my attention being fully occupied preserving my balance on the rickety ladders, narrow ledges, and galleries, by which the cliffs are scaled; and the only interesting new plant collected was a species of Euonymus, with liver-coloured flowers. The violet Chirita lurked in the shadow of every cliff, and a shrubby, orange-flowered Seneci was common among a variety of familiar Compositae. Although there was no change in the flora as a whole, I noticed a Poplar in the river bed. That evening we camped on a sandbank, and the day, which had begun with a downright drizzle, and remained sulky, passed out into a night of splendour when the moon rose.

My Bamboo shelter, which the Mishmi ran up in twenty minutes, was roofed with the leaves of a wild Banana, whose under surface is coated with snow-white meal in such abundance that the men who cut and carried in the leaves returned looking like millers. If the leaf is gently heated over a fire, the meal quickly melts, and flows as a film of varnish over the bright green leaf, adding a high polish.

The morning was cold with a heavy dew which splashed like rain from the trees. I was up at 5, cooked myself a frugal breakfast, and by 7.15 we were on our way again, still marching in the river bed.

The cliff climbing continued, some of the traverses and descents being perilously awkward. Presently a wall of snow rose into view over the lower spurs in the middle distance. We were surrounded by forest hardly distinguishable from the jungle of the Lohit; nevertheless, when that white mantle appeared, cast over the shoulders of the western range, I felt that at last we were approaching the alps. Alas! for the elusiveness of the Mishmi Hills, where seeing and attaining are two very different propositions.

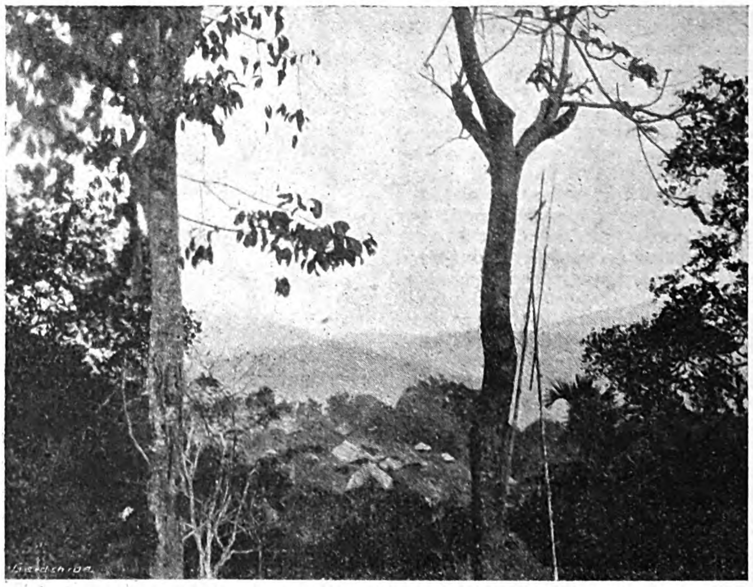

FIG. 71.—A VILLAGE IN THE HILLS.

At last we left the bed of the Delei and turned up a steep, boulder-choked torrent flowing down from the eastern range; gaining the ridge, a climb of about 1,500 feet brought us to Chibaon, a large village scattered down a broad, cultivated slope. Here a site had been selected for us, and although it was not such a camping ground as we should have chosen for ourselves, perhaps, yet on so sultry a day I was glad to pitch a small alpine tent anywhere, and look about me at leisure.

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19, and February 2, 16, 1929.

My first care was to get out some stores, both for my companion and myself, and to send off the former, after which I straightened things out a bit. The altitude of our second camp was about 3,250 feet, and not far above us rose the ridge, all shining with the spring colours of temperate rain forest. We faced due west, beneath us was the gorge of the Delei, and beyond, the long, bumpy spurs of the western wall, whose highest visible peaks, 13,000 to 14,000 feet high, were covered with snow. Behind us, that is to say, to the east, a long, easy gradient, for the most part arable land, ascended to a low ridge, with trees along the sky-line, which then rose sharply to well-forested heights; to north and south the mountains threw out long arms which held us in close embrace. Thus the only possible climb was to the east.

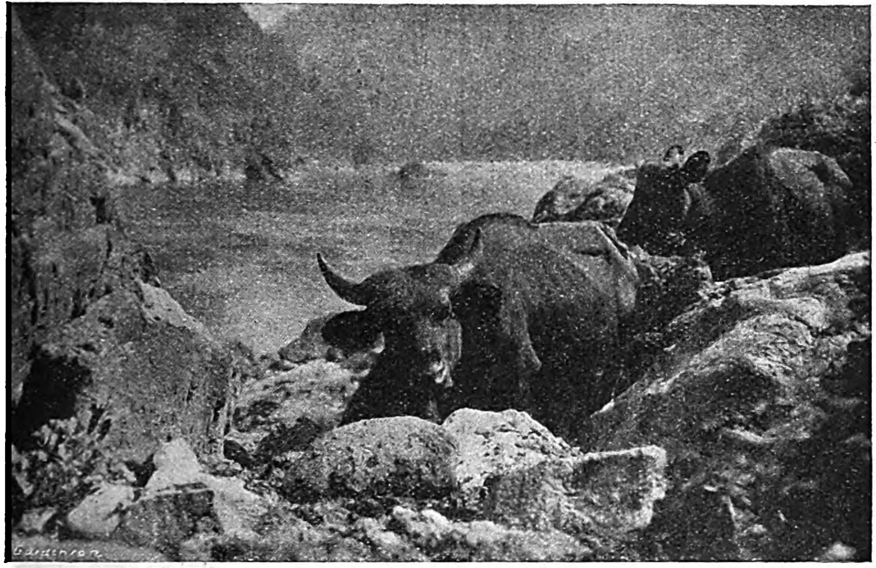

FIG. 72.—MITHUN: THESE ANIMALS ARE SLAIN BY THE MISHMIS IN THEIR RELIGIOUS RITES.

One striking Orchid I had collected on the way up—a Dendrobium; but whether it was a form of D. nobile, or something quite different, I was unable to satisfy myself. Now I was anxious to be up and doing; but as I had to cook my own meals, having left the cook with my companion down the valley, I resolved to rest in camp next day.

The day, April 6, 1928, was fine and hot, and after spending the morning in camp, and looking longingly at the rain forest through my field glasses, I broke my resolve at 2.30 and started up the slope which stretched in dips and curves to the distant ridge. It was further off than it looked. First past a series of huts, and through cultivation (Fig. 73), where Opium Poppies and Peas were much in evidence, then through secondary growth where I found a remarkable Gaultheria, and a very fragrant, white Jasmine. The Gaultheria had very large, cream-coloured flowers, rosy-cheeked like an Apple on one side, and big leaves, rather coarse and untidy; but a month later, when I saw the young foliage, freshly-green and crimson-haired, I changed my opinion. Altogether a promising shrub, although, coming from an altitude of only 5,000 feet, one would suspect it to be delicate. However, it looks robust. The large, blackish-purple fruits ripen early in the rains.

At this stage, I was joined by a Mishmi lad who offered to guide me to the ridge, and we went on over recently felled timber, and so finally to the ridge. Just over the brow was virgin forest, the beautiful temperate rain forest of the Indo-Himalayan mountains. At once I began to notice strange trees and shrubs. One of the first to attract attention was evidently a Podocarpus, but all the specimens I saw had been felled, and were sprouting new shoots which bore no cones. The narrow, linear leaves are from four to six inches long, with two silvery-white stripes along the under surface, one either side of the midrib. Later, I saw trees in the rain forest, intact.

Along the ridge were thickets of Ericaceous and other shrubs, several of them in flower, but my attention was soon attracted to a white-flowered Rhododendron perched high up in the fork of a tree. Shortly afterwards we came to a specimen on the ridge. The flowers are creamy-white, rather than of that otiose and puritanical whiteness so often associated with the 'Maddeni' series, and there is a dash of yellow in the throat. The truss is almost invariably four-flowered, and every shrub exhales a wealth of fragrance. At first sight I felt convinced that here was a new species, but with more material and a detailed examination, I could find little to distinguish it from R. dendricola, or at all events, from the plant collected under that name in the Seinghku valley in 1926. True, it was flowering a good fortnight earlier, but one can attach no importance to a seasonal peculiarity of that sort. The only definite distinction was this: The Delei valley plant had a corolla which was pubescent all over; whereas the corolla of R. dendricola (type) is pubescent only at the extreme base. I am not prepared to separate the former from R. dendricola on evidence as slender as that, and for the present at any rate K.W. 8,016 may be set down as the Delei valley form of R. dendricola. It was quite common in these forests, being almost always epiphytic at its lower level (5,000 feet), and almost always terrestrial, growing on rocks, towards the upper limit (6,000 feet).

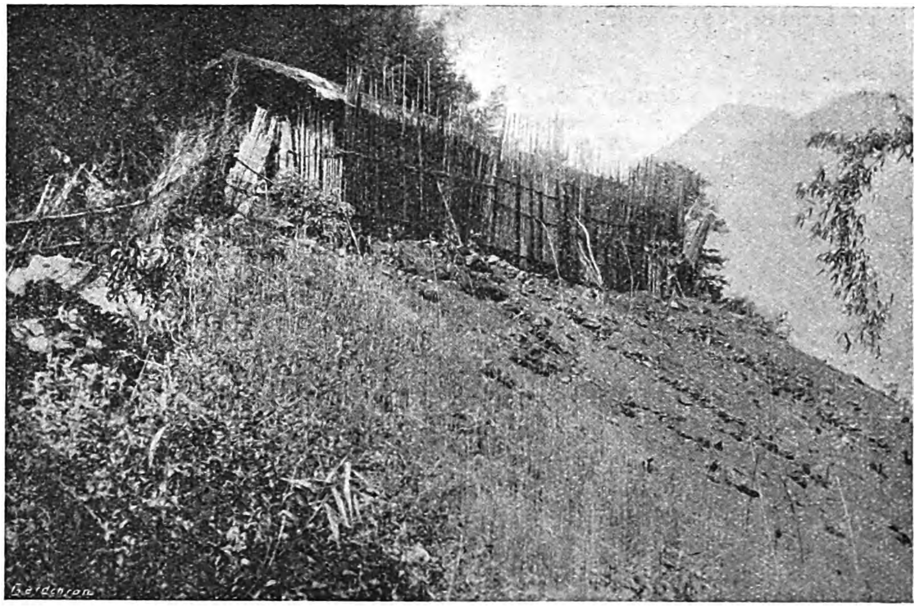

FIG. 73.—A MISHMI HUT PLACED PRECARIOUSLY ON A HILLSIDE ABOVE STEEP CULTIVATION.

Another interesting epiphyte seen on the ridge was a huge Cymbidium, the heavy, drooping spikes bearing a dozen or fifteen flowers with apple-green perianth lobes, and a cream-coloured lip peppered with purplish-crimson dots and dashes.

The sun was now setting, and it was time to turn back if I would reach my camp before dark; nevertheless, I was loth to drag myself away from the first hunting-ground of the season, and lingered on, noting various species "for future reference," and collecting a Pentapterygium. Instead of returning on my tracks, however, I indicated to the guide a route down the ridge bounding our valley, and so to the village; but he, silly fellow, misunderstanding, led me over the hills and far away to the next village, whence a rough two-mile tramp in darkness brought us late to camp.

On the following day—April 7—the weather broke, and it rained all day; I emphasise this because, on the whole, April was an unexpectedly fine month—we had nineteen practically rainless days. I was happily at work in my tent on the plants collected the previous evening, when suddenly out of the drenching rain appeared the cheerful face of my companion, Buttercup. He had experienced much difficulty in getting together the last eight coolies required, but had finally got away from the bridge two days after I left. So the party was united once more, and we were another stage on our journey; I was glad to see our cook, as I was tired of cooking my own meals, and had already fallen back on boiled eggs, biscuits and tea as the line of least resistance. Buttercup also brought with him the mail-runner, who had come from Denning in five days.

We did not anticipate much difficulty in getting coolies here, as there were plenty of small villages in the neighbourhood, and Chibaon itself boasted two dozen huts; but being anxious to push on, I thought it best to indent for them immediately. Meanwhile, the indications were that a few days spent here would not be altogether wasted. So we settled down in Camp II, little dreaming that we were to be there about a fortnight! *F. Kingdon Ward.*

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NOTES FROM A NEW ZEALAND PLANT HUNTER.

To a visitor who has been accustomed to European meadows, with their great wealth of showy herbaceous plants, New Zealand is at first rather disappointing. Owing to the climatic conditions, primeval New Zealand was a land of tangled forests and dry, exposed areas covered by coarse, tussock-forming grasses, and so the only spaces left for the development of moisture-loving herbaceous plants were the alpine valleys, and in these the flora is rich, both in species and in individuals, but there are few bright colours, the predominating notes being white and yellow.

The climate of New Zealand is decidedly insular, being rather cool, with no severe frosts, and a rainfall which is both abundant and well distributed, there being no definitely dry or rainy seasons.

Before systematic colonisation by Europeans, little more than eighty years ago, forests covered extensive areas, although, nowadays, comparatively little remains of these virgin forests, except in certain areas of the South Island where several extensive national parks and reserves have been created.

The Southern Alps, which culminate in Mount Cook, some 12,000 feet high, are parallel with the west coast, and from them glaciers descend, in some cases to within a dozen miles of the ocean. This extensive mountain range casts a huge "rain shadow" over the centre of the South Island by intercepting the moisture-laden winds from the Tasman Sea, so that the narrow strip of territory between them and the ocean has over two hundred inches of annual rainfall, while the east coast has under thirty inches, and many of the central parts have much less.

Where rainfall is sufficient, forest conditions prevail, but much of the dry, eastern area is almost treeless, being clad with coarse tussock grasses, of which the commonest are Festuca novae-zealandiae, Poa caespitosa and Danthonia flavescens; among the tussocks grow several herbaceous Senecios, S. bellidioides, S. saxifragoides and S. Haastii, with Bulbinella Hookeri, Helichrysum bellidioides, and several species of small, terrestrial Orchids. In the central dry areas, Carmichaelias, Raoulias, and other curious drought-resisting forms of vegetation have been developed. Where forests have been destroyed by fires, large areas are colonised by the common Bracken, Pteridium aquilinum, which often gives way to Leptospermum species, the Maori name for which is Manuka. L. scoparium is one of the commonest and most beautiful of New Zealand shrubs, corresponding to the Gorse and Broom of European landscapes. It is usually found in pure "stands," which may cover many acres on dry, exposed hillsides. L. ericoides (Fig. 75), when mature, is a tree some forty feet in height, and quite three feet in diameter. Although often occupying poor soil where usually little or no undergrowth is present, it sometimes invades good soil, after a forest fire, in which case it forms a nursery for mixed forest. The forest starts as an undergrowth of mixed plants, and as these reach maturity they gradually choke out the Leptospermums. Such mixed forest consists of Griselinia littoralis, Melicytus ramifloruum, Nothopanax arboreum, N. Colensoi, Schefflera digitata, Dacrydium cupressinum, Podocarpus ferrugineus, P. Hallii, Fuchsia excorticata, Sophora microphylla and others, including several lianas and many Tree Ferns (Fig. 74). In their extreme forms, the Leptospermums are readily identified, but they approach each other very closely, and in many areas they seem to hybridise quite freely. Their beautiful, graceful growth-form and the numerous sprays studded with countless small, white flowers, place them among the most decorative of New Zealand shrubs, but like so many other beautiful plants which are abundant and widely distributed, they are almost entirely overlooked in their native country.

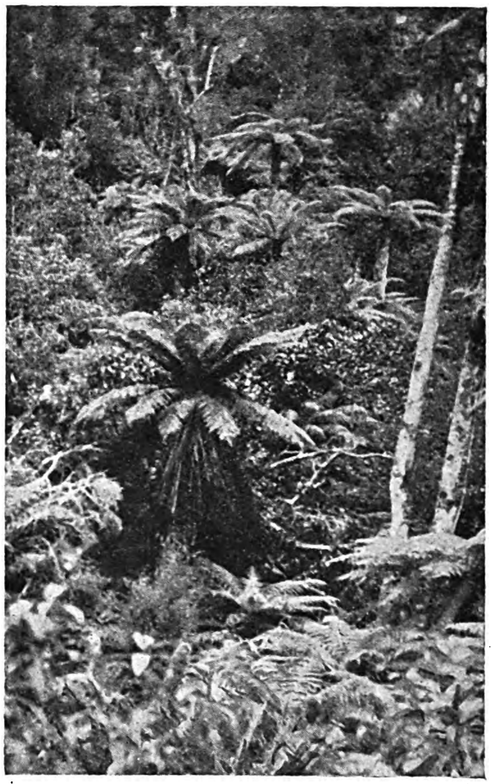

FIG. 74.—NEW ZEALAND FOREST INTERIOR; SHOWING DICKSONIA SQUARROSA.

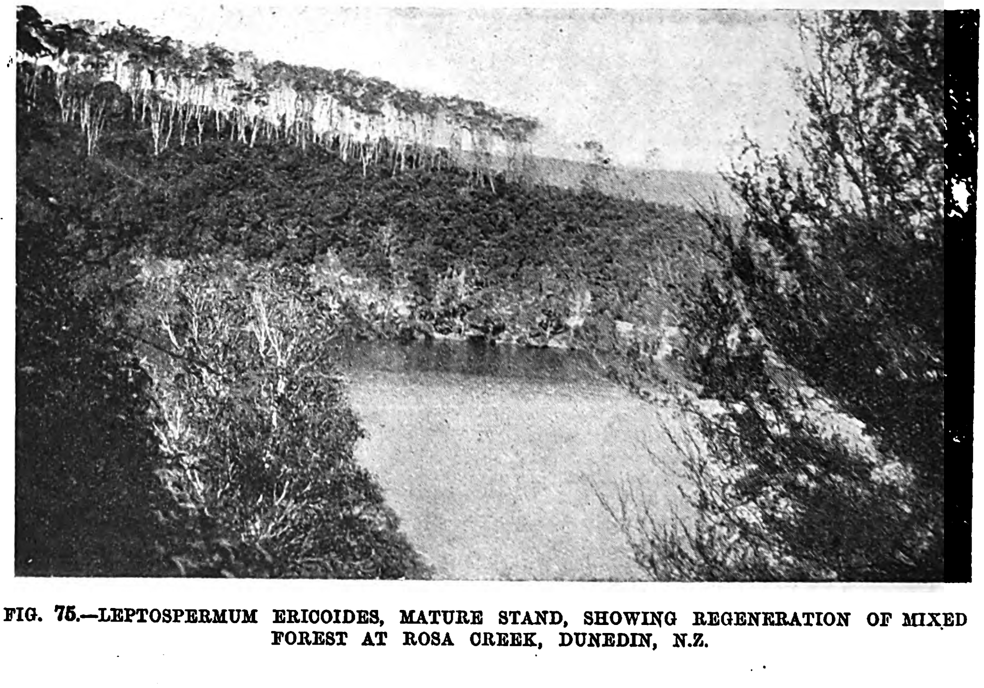

FIG. 75.—LEPTOSPERMUM ERICOIDES, MATURE STAND, SHOWING REGENERATION OF MIXED FOREST AT ROSA CREEK, DUNEDIN, N.Z.

In moist, open places, three giant Monocotyledons—New Zealand Flax (Phormium tenax), the Cabbage Tree (Cordyline australis), and the Toe-toe (Arundo conspicua), are prominent plants, which give the landscape a characteristically exotic appearance which readily catches the eye of a wanderer from the northern hemisphere.

The abundant rainfall and mild temperature produce a magnificent profusion of vegetation reminiscent of tropical jungles, a forest composed of evergreen trees and shrubs, many lianas, numerous Tree-Ferns, and a superabundance of epiphytic and terrestrial Ferns and mosses. The chief trees are Podocarpus dacrydioides, P. Totara, P. spicata, Libocedrus Bidwillii, Weinmannia racemosa, Metrosideros robusta, Quintinia acutifolia, and most of the species already mentioned as mixed forest. The Tree Ferns (Fig. 74), with their curious trunks—some of them quite two feet in diameter—made up of the persistent, scale-like bases of the fronds, are the most conspicuous plants of the forest interior. The most abundant species are Hemitelia Smithii and Dicksonia squarrosa, which grows quite fifty feet in height, being the tallest growing of all New Zealand Tree Ferns. The beautiful Cyathea dealbata, whose fronds have a silvery undersurface, is abundant in many areas, but is rather local in its distribution. The Hymenophyllums and Polypodiums, in many species and an infinite number of individuals, form a luxuriantly-delicate growth, covering the forest floor, and even the tree trunks. Indeed, a glimpse into the interior of a typical New Zealand rain-forest shows abundant reason why this land should be called "The Land of Ferns."

The interesting Kidney Fern, Trichomanes reniforme, is undoubtedly the most striking of the many endemic Ferns of New Zealand. The vivid green, rather leathery, kidney-shaped fronds have the sori inserted around their entire margins. Because it is capable of only slight adaptations to help withstand drought, T. reniforme is found only when the humidity of the air is comparatively high. Other widely-spread epiphytes are Dendrobium Cunninghamii, Earina mucronata, Actilia species, Freycinetia Banksii, many species of Ferns and Lycopodiums, and the interesting Tmesipteris tannensis.

Although the general appearance of the forest is a sombre green, it contains several fine flowering trees, but these are usually isolated specimens, and do little to light up the landscape with a blaze of colour. Sophora microphylla, better known throughout the colony by its Māori name of Kowhai, is certainly a most desirable object when the curious, golden-yellow, Papilionaceous blossoms are produced in early spring. The Rata (Metrosideros robusta) runs the Kowhai close for favourite place in public opinion. In midsummer it bears a great profusion of blossoms, of which the numerous scarlet stamens are the showy part. Other flowering trees worthy of note are Carpodetus serratus, which covers itself with quantities of small white flowers; Pittosporum eugenioides, a pleasing tree of fine habit bearing a wealth of scented, yellow flowers; P. tenuifolium, a graceful subject which produces numerous dark red flowers; and Fuchsia excorticata, a widespread tree found commonly on, or near, the edge of the forest, which periodically sheds its light brown, papery bark, thus preventing its trunk and limbs being colonised by epiphytes. It produces a large number of rather inconspicuous, reddish flowers, which are interesting because of their blue pollen. Aristotelia racemosa, an inhabitant of moist valleys, produces, in early summer, large numbers of dainty, pink flowers, which are, later, followed by clusters of small, dark-red berries.

The forest is prolific in the production of lianas, which begin life as either twiners, climbers or sprawlers. Clematis indivisa, with its huge trusses of delicate, white flowers, is a most attractive member of the genus, while the yellow-flowered, sweetly-scented C. foetida—a misnomer for which Raoul was responsible—is a very dainty plant. Rubus australis, R. cissoides and its peculiar leafless form, R. cissoides var. pauperatus; Muhlenbeckia australis, Parsonsia heterophylla, and a form of Calystegia sepium, are all abundant. Angelica geniculata is an interesting climbing member of the Umbelliferae. Compositae is represented by the yellow-flowered, climbing Senecio sciadophilus, and Myrtaceae — a family which does not perform the feat elsewhere—has several species of Metrosideros which are climbers, M. scandens and M. hypericifolia being the most common. Rhipogonum scandens, a curious Lilaceous plant with reticulately-veined leaves, bears numerous clusters of small, starry, white flowers which are succeeded by comparatively large red berries. *Dunedin.*

(To be concluded.)

NOTES FROM KEW.

In the outdoor garden, at least at Kew, early-flowering shrubs are later than usual in displaying their welcome blossoms. The Rhododendrons in particular are much behind the average date of flowering.

The Hamamelis, or Witch-Hazels, appear to be the least affected by weather conditions. Throughout January, H. mollis, the most beautiful of all Witch-Hazels, produced a wealth of blossoms. These are rich yellow, deliciously fragrant and freely produced in clusters along the leafless twigs. Few flowers are more delightful at this season of the year for vase decoration than those of Hamamelis, H. mollis for preference, arranged with the bronze-tinted foliage of Mahonia (Berberis) Aquifolium. They will last in good condition for upwards of a month and scent the room with their fragrance.

Other Witch Hazels flowering freely at the time of writing are H. arborea, deep yellow; H. japonica, rich yellow, and its variety Zuccariniana, with pale lemon-yellow blossoms. When selecting positions for planting, which may be done immediately after flowering, associate them with evergreens so as to provide an effective setting and background for the leafless flowering shoots, and shelter for the blossoms. The best specimens of H. mollis at Kew are growing in the Buxus (Box) collection, where the soil is a light, sandy loam.

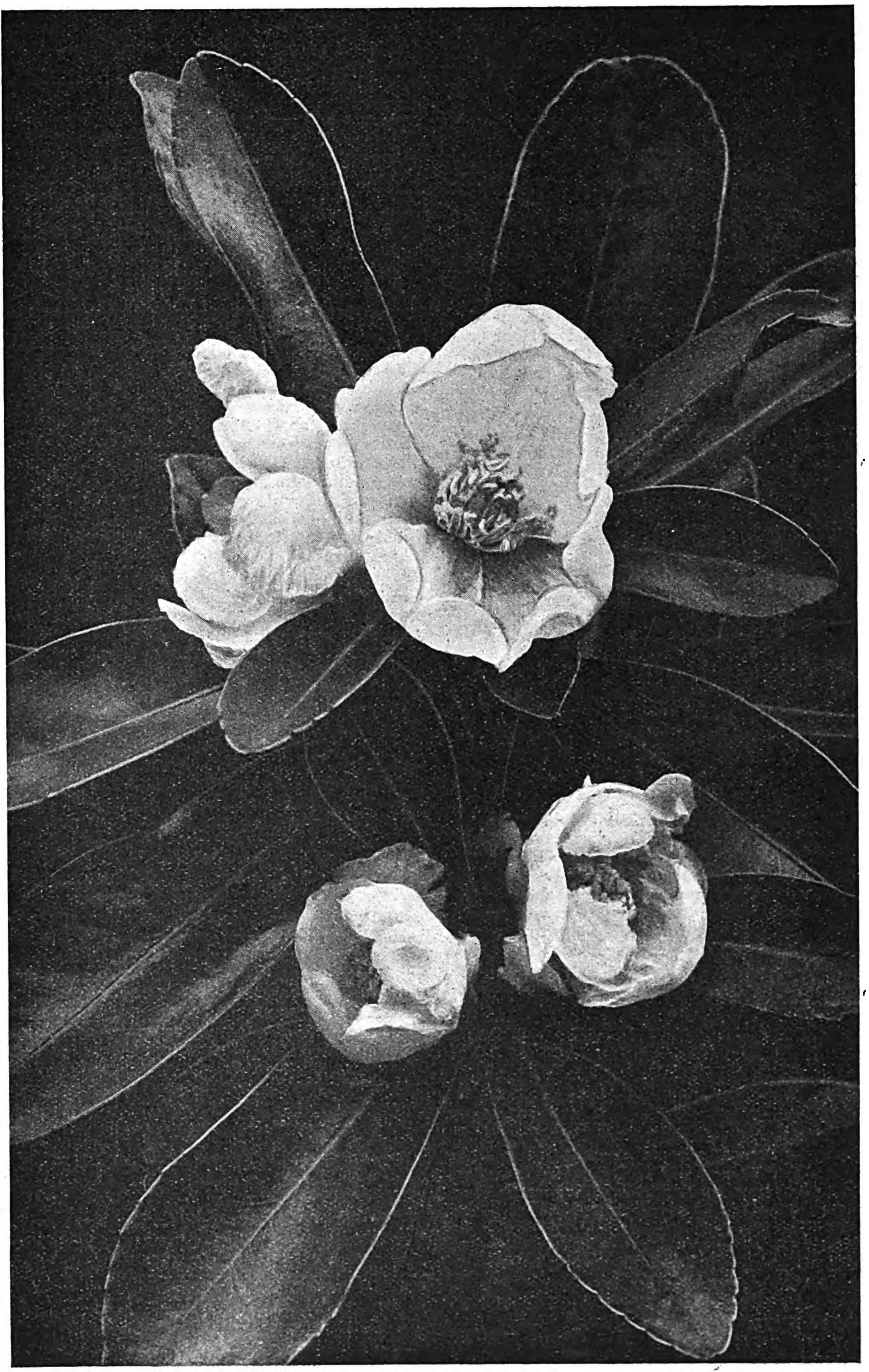

FIG. 76.—GORDONIA LASIANTHUS (?).

R.H.S. Award of Merit, February 12. Flowers white. Shown by Lt.-Col. Messel (gr. Mr. J. Comber), Nymans, Handcross, Sussex.

(see p. 128).

Viburnum Tinus is one of our best-known evergreen shrubs, but is not nearly as much planted as its merit deserves. Although a native shrub of the Mediterranean region and south-east Europe, it is more hardy than generally believed. Thriving in shade, the Laurustinus is a most useful shrub to plant as an undergrowth for tall trees. One of the best examples of this at Kew is under a Lebanon Cedar. As a bush in the open shrubbery border and as a lawn shrub, Viburnum Tinus is an attractive winter-flowering subject, opening its clusters of white flowers from about November to March.

There are several varieties, the most distinct being lucidum, hirtum, pyramidale and purpureum. The variety pyramidale makes a splendid evergreen hedge.

Few shrubs root more readily during late summer and autumn in a slightly heated propagating case or in a cold frame.

Several bushes of the Winter Sweet, Chimonanthus fragrans, are flowering more freely than usual. This, one would be inclined to attribute to the sunny days of last August and September, which ripened the wood. The flowers are produced even more freely on the unpruned bushes in the open than on a closely pruned plant trained against a wall.

Another deliciously fragrant, winter-flowering shrub is Viburnum fragrans, a recent addition to our gardens, introduced by Messrs. Purdom and Farrer. The blooms are, unfortunately, prone to suffer badly from weather conditions in the open, at least, at Kew, and for this reason the shelter of a south or west wall is desirable. A Himalayan shrub, Viburnum grandiflorum, is also in flower on a west wall. The pink-tinted flowers are borne in clusters on the leafless twigs, and both in size and colour they suggest the charming Daphne odora.

The Arbutuses, or Strawberry Trees, are deserving of much more attention in gardens. They are very ornamental, large, evergreen shrubs or small trees, being not only showy and interesting in themselves, but providing an excellent foil in the shrubbery borders and pleasure grounds for spring-flowering trees and shrubs. Further, the reddish or cinnamon-coloured bark is very striking in the winter sunlight against the dark green foliage.

The flowers of the common Strawberry Tree, Arbutus Unedo, have fallen, and those of Arbutus Andrachne are not open, but the hybrid between these two species, A. andrachnoides, as one would expect, is in flower. The Arbutus is one of the few Ericaceous shrubs which will grow on chalky soils.

The dwarf Heaths, varieties of Erica carnea are charming in flower, with a profusion of rosy-pink flowers. A choice of four from among the numerous named varieties might well be James Backhouse, King George, Vivellii, and the dainty, dwarf, white variety alba. *A. O.*

NOTES FROM A WELSH GARDEN.

A SPELL of mild weather in early February may mean retribution and regrets later on, but it is very pleasant while it lasts. Moreover, it does enable a number of early-flowering plants to get their business done with comfort to themselves and satisfaction to us. Rhododendron Nobleanum, for example, which is so often snubbed for its precocity, has had ideal weather for its welcome blooms. So much may also be stated of the Berberis commonly known as B. japonica, or the Japanese Mahonia. This very ornamental old plant does not thrive in this light soil, but, if it is small of leaf and stature, it flowers unusually well, and a bush about four feet tall is now carrying a fine cockade of its fragrant, sulphur-yellow blossoms at every tip. Azara microphylla, always attractive as an evergreen, can be relied upon to flower at this season here in almost any weather. But if it has less to lose, its blossoms being very small and hidden beneath the spreading branches, they are so highly scented that their Vanilla-like perfume can be detected for a considerable distance. Daphne Blagayana is also flowering, and its ivory-yellow clusters are so exceedingly sweet when the temperature is genial that for these alone a mild interlude would be very welcome just now.

But in spite of the open weather the winter-flowering dwarf Heaths are unusually late, and this appears to be a feature of the season elsewhere. In regard to Erica carnea and some of its varieties the phenomenal shortage of rain in January may be the reason. But E. darleyensis is at least six weeks behind its customary date. It has been more normal as to time during winters of much greater severity. Curiously enough, E. mediterranea is more forward than I have seen it for many years, and its Irish form, E. m. hibernica, is even showing colour.

Snowdrops have rarely flowered so abundantly as they have been doing since the first week of February, the blossoms excelling in size as well as in numbers. The old, yellow Dutch Crocus is welcome enough these days in a garden where mice have an epicurean taste for practically all the more expensive kinds, and it has been blazing with its customary heartiness since the Snowdrops came. The only species which succeeds in making any sort of a stand against the enemy, it being comparatively cheap, is C. Tommasinianus, a dainty little thing of palest lavender and silver-grey. The rather later C. biflorus is also tolerably permanent. Leucojum vernum carpathicum is one of the early spring flowerers that one can never get enough of. Its large, almost globular, orange-tipped bells are borne on stalks sometimes eight inches high, and they are slightly fragrant. But, in my soil, at any rate, this lovely plant seems to take years to become properly established, and during the process the bulbs have a way of disappearing.

Cyclamen coum and C. c. album are flowering in the woodland, bright spots of colour among their dull, but very distinctive foliage. Pulmonaria rubra, earliest of its early race, has been in blossom under the trees since January. Its bright, tile-red flowers are very pleasing among the green of the undergrowth, and they have no trace of the family blue or purple in their pigment. A robust grower, P. rubra enjoys considerable space for its large and thongy, rhizome-like growths which bristle with roots that are more often high and dry than anchored in the soil. Moreover, the raspy leaves of this plant will, after flowering, often be over a foot long and eight inches wide. They may be very faintly spotted, but are more often a uniform olive-green.

Anemone blanda var. Ingrami was in full bloom during February's first week, making lovely patches of a soft blue-purple, in various shades according to the age of the blooms. There is nothing more delightful than these, with A. Hepatica and colonies of Eranthis hyemalis, especially where they have been growing undisturbed for years, and the soil has a light covering of moss. The slightly later-flowering E. cilicica will not go unobserved among these, for its "frills" are more deeply cut than those of the older species, while they are distinctly bronzed, and the large flowers, especially when in full sun, are rather a richer yellow. The hybrid, E. Tubergenii, is a compromise between the two species named, with all their good points and a tendency to last longer in bloom, as the flowers are sterile.

Viola calcarata has the reputation of being uncertain in flowering in some gardens. In any case it is hardly a winter flowerer. But coming across an attractive typical plant in a good deep bluish-lavender at Mr. Ingwerson's nursery last spring, this was brought home, and it has never been without blossom since planting. Frost has destroyed the blooms several times, but with the return of milder conditions a fresh crop has always appeared, and it is still flowering with undaunted courage.

There are some variegated evergreens which afford such welcome colour at this season that even those who dislike such things may find their principles shaken. One of these is Aristotelia Macqui variegata, a native of Chili and belonging to the Tiliaceae. The ovate leaves of this shrub, from two to nearly six inches long, are a rich, glossy green, clouded with yellow markings, while the leaf-stalks and the whole of the younger wood is a bright plum-red. The general effect in the winter garden is thus very cheerful, and although the shrub is not hardy, it generally manages to carry its foliage through the greater part of the winter here. Even, when severely injured by frost, it has always started from the base in spring. As a matter of fact, I always cut the plant back in any case, for then one gets finer foliage, and the bark colour of the young growths of the year is much better than that of older wood. These shoots will grow about four feet tall in a season, and they are very elegant in habit. Since there is always, as I have suggested, a chance of the foliage being injured during the winter, a sheltered position is desirable. *A. T. Johnson, Ro Wen, Conway, N. Wales.*

THE GENUS PRIMULA.

(*Continued from p.* 124.)

LANCIFOLIA (Pax et K. Hoffm.). Lance-leaved P. (Nivales.)

A BEAUTIFUL sub-species of P. russeola (Balf. f.), with a tuft of papery, pointed, lance-shaped leaves one-and-a-half inch to three inches long, gradually tapering to a winged stalk; margins revolute and edged with small teeth; upper surface more or less smooth, underside coated with sulphur-yellow meal. Flower stem two-and-a-half to three-and-a-half inches tall, bearing two terminal, rose-coloured blossoms, on slender stalks a quarter- to half-an-inch long. Corolla half- to three-quarters-of-an-inch across, with rounded, blunt, entire lobes; tube cylindrical below, dilated upwards, about equalling the calyx in length. Flowers in July and August. Not in cultivation.

Grows near Beju-Batang, in eastern Tibet, at about 12,000 feet above sea-level.

Culture: Good rich loam, in a damp spot, with protection from wet in winter, is indicated.

LATISECTA (W. W. Sm.). Scalloped-leaved P. (Cortusoides-Geranioides.)

A handsome, deciduous, perennial species with a slender rootstock which produces a sparse tuft of membranous leaves, with broadly heart-shaped blades about two inches long, very deeply cut into about seven, narrowly egg-shaped lobes, with wide, rounded notches between each lobe; both surfaces clothed with long, white hairs, the underside densely so; the blades are borne on slender stalks about four inches long, covered with long hairs. Flower stem about six inches tall, slender, more or less hairy, bearing an umbel of two to four rose-coloured blossoms on erect stalks about half-an-inch long. Corolla about three-quarters-of-an-inch across, with broadly heart-shaped, notched lobes; tube cylindrical, smooth, about five-eighths-of-an-inch long. Flowers in June.

Grows in dense, shady forests on Nyima La, in Tibet, at 11,000 to 12,000 feet above sea-level.

Culture: Rich loam and Oak or Beech leaf-soil, in a cool, shady spot, with protection from damp in winter, should suit it.

LEGENDREI (Bonati). Legendre's P. (Souliei.)

This pretty, dwarf perennial is a sub-species of P. Souliei; it produces a tuft of smooth leaves about two inches long, with oval, blunt blades about three-quarters-of-an-inch long, heart-shaped at the base, contracted into a long, thread-like stalk; margins edged with comparatively large, regular, rounded teeth. Flower stem hollow, three to four inches long, bearing an umbel of about half-a-dozen violet blossoms with a white tube, on erect stalks about three-quarters-of-an-inch long, mealy at the tip. Corolla flat, about three-quarters-of-an-inch across, with linear, deeply bifid lobes; tubes cylindrical, about three-eighths-of-an-inch long, longer than the calyx. Not in cultivation.

Grows on sandstone on the mountains of Oua-Pao-Shian, in western Szechuan, at about 10,000 feet above sea-level.

Culture: Friable loam, containing lumps of sandstone, in a cool, half-shady spot, with protection from damp in winter, is indicated.

LEPTA (Balf. f.). Slender P. (Muscarioides.)

A small, delicately formed species with rosettes of thin, papyrus-like leaves about two inches long, with broadly lance-shaped or oblong-ova blades, rounded or blunt at the tip, gradually tapering to a winged, or shortly contracted into a wedge-shaped, stalk; margins edged with regular, blunt teeth, fringed with fine hairs; upper surface pale green, clothed with short down, underside glaucous and more or less hairy. Flower stem fragile, two to six inches tall, more or less coated with yellow meal and bearing a small, crown-like head of very deep purplish-blue, deflexed, and fragrant blossoms.

Corolla tubular above, then concave, about three-eighths-of-an-inch long, with rounded, obscurely retuse or toothed lobes, mealy within. Flowers in July.

Grows in damp, open pastures, on the mountains north-east of Chungtien, in eastern north-western Yunnan, at 13,000 to 14,000 feet above sea-level.

Culture: The conditions recommended are good friable loam, in a well-drained spot plentifully supplied with water when the plant is in growth. *A. W. Darnell.*

(*To be continued.*)

A FUNGUS DISEASE OF MECONOPSIS.

During the past season it was noted that several of the Asiatic species of Meconopsis were attacked by a fungus which may prove to be an unwelcome addition to the ranks of parasitic fungi attacking garden plants. The fungus concerned, Peronospora arborescens (Berk.) de Bary, is very closely allied to, if not identical with, the species attacking the common Corn Poppy, and also Papaver somniferum, in which it causes the well-known Opium Poppy blight in China and India. Since it is known to bring about serious losses in the Opium Poppy fields, and since, in one case at least, it proved very destructive in this country to the beautiful M. Baileyi,* it is advisable to put readers of *The Gardeners' Chronicle* on their guard, by pointing out the facts so far as known, and by suggesting appropriate treatment. It is far from the purpose of this article to cause anything in the nature of a scare. Where the fungus is absent, there is no reason to anticipate trouble, but where it is already lurking in gardens, unless proper precautions are taken, its spread to Meconopses must be expected.

It should be pointed out at the outset that although the new disease is technically classed as a "downy mildew," or "false mildew," it is quite distinct from the true or "powdery mildews," and consequently bears no resemblance to the common white mildew which not infrequently attacks Meconopses especially under glass. This latter disease is relatively harmless, but in order to prevent confusion with the more serious malady, it may be well to point out the differences between the two classes of fungi.

True or "powdery mildews" are familiar to everyone by their conspicuous white appearance. The various species concerned belong to the family Erysiphaceae, examples being the common mildews of the Rose, Chrysanthemum, coppiced Oak, Euonymus, Vine, Gooseberry, and of many others. The white appearance is due to the presence of an external mycelium (spawn) on the surface of the leaf or shoot. The mycelium produces spores in abundance, and it is chiefly from these that the mildew acquires its mealy appearance; hence the term "powdery." The fungus is entirely external, except for minute suckers by means of which it obtains its food from the leaf.

"Downy mildews" (or "false mildews," as they are termed on the Continent) belong to the family Peronosporaceae; they are much less conspicuous, but bring about more injury. This is due to the fact that the mycelium is not superficial but internal. Sooner or later the attacked tissues are killed, and the result is seen in blackened areas in the leaves, or if the attack is severe, in the blackening of entire leaves and shoots. The "downy mildews" are, fortunately, less familiar in gardens than the "powdery mildews," although examples occur in many of our native plants. That most notorious parasite, the Potato blight fungus (Phytophthora infestans), is a very close ally. The summer spores of the false mildews are produced on filaments which protrude through the stomata usually on the under-surface of the leaves. The spores and filaments appear as a greyish mould, which has led to the somewhat inappropriate name of "downy mildew." Resting spores formed within the leaf tissue also occur.

Distribution of the Disease and Species Attacked.

No attempt was made to obtain a complete or exact idea of the incidence of the disease on Meconopses last season, but the fact that it occurred in England, Scotland and Ireland, shows that it is widely spread. Specimens were received from Perth, Northampton and Kent, and it was observed in Surrey and in a garden near Aberdeen. Reports were also received of its occurrence in Middlesex. The first and most severe attack was reported from Ireland, specimens being received at the end of May. It was the publication of the note in *The Gardeners' Chronicle* of June 9, 1928, recording this outbreak, which led to other specimens being received for investigation. Evidence was supplied that the mildew occurred in north Middlesex in 1927. The presence of the disease was, however, far from general, since in response to enquiries several well-known growers of Meconopses replied that their plants were quite healthy. Ther was, moreover, no trace of the parasite at Kew, nor was it observed at Edinburgh or Glasnevin, although carefully searched for.

Of the species attacked, the most susceptible appears to be M. betonicifolia forma Baileyi, although a bad attack was also reported on M. grandis from Perth. Slight traces of the fungus were noted on M. Wallichii, M. superba, M. simplicifolia, M. paniculata, M. Prattii, M. latifolia and M. integrifolia, in one or other of the various gardens concerned.

Description of Symptoms and Life-History of the Fungus.

The symptoms of the disease are very definite. It shows itself first as small, blackish spots or blotches on the leaves, and these, particularly in damp weather, rapidly increase in size. The blotches, which in outline are often elongated rather than circular, may occur on any part of the leaf or petiole, and on M. betonicifolia forma Baileyi, at any rate, are deep black or almost blue-black in colour. The distinguishing feature of the disease is the presence of a grey mildew or mould on the underside of the blotch, especially along either side of the veins. This represents the fructifying stage of the fungus, consisting of exceedingly fine-branched filaments (hence the specific name arborescens) bearing spores, and its presence serves to distinguish the blotches from injury due to weather and from so-called "ordinary decay." The filaments and spores are very characteristic, and to a mycologist are instantly recognisable when examined microscopically. To the layman, the presence of the very minute grey mould on the underside of the leaf will be a sufficient guide.* If the weather be damp and mild, many infections may take place and, as the Irish specimens showed, the whole plant, including the shoot and flower buds, may be involved, and become blackened from top to bottom.

The mycelium (or spawn) of the fungus is internal, and it is only the finely-branched filaments which emerge in order to bear spores. These summer spores (or conidia) are produced in great numbers. They are short-lived, but are blown or washed off and germinate readily on damp foliage. The germ-tube of the spore enters the leaf, develops mycelium, and by killing the leaf tissues produces the black blotches. The special function of the conidia is to propagate the fungus during the growing season. When the parasite has destroyed the tissues, and, in consequence, is faced with a food shortage, it produces inside the dead tissues reproductive bodies of another kind, namely, resting spores. These are formed by a sexual process peculiar to the family Peronosporeae. They have a thick protective coat, and their function is to tide the fungus over an unfavourable period. They fall to the ground with the decaying leaves, and remain dormant until the following spring but, like weed seeds, probably all do not germinate the next season. In the spring the lowermost foliage of the Meconopsis in contact with the ground is readily infected by the germinating resting spores, and thus the cycle of the disease is completed. Once the lower leaves are infected the mycelium develops within the tissues, and after a few days bears conidia, which, blown away, germinate and start a new infection.

Many successive infections and generations of conidia may be produced during the season, and in all probability each one develops its own crop of resting spores.

There is also the possibility of the existence of an additional method of hibernation, namely, that of resting mycelium in the leaves or crown of infected plants, as has been shown to be the case with several other species of the Peronosporaceae. This is a point of practical consequence, since, if such hibernating mycelium exists, the disease would develop again in the spring without infection by spores.

Identity of the Fungus and its Distribution.

The fungus Peronospora arborescens attacks, as before mentioned, many members of the Papaveraceae, and is usually regarded as a single species. It was originally described by Berkeley in 1846 on the Corn Poppy (see *Journal* of the Royal Horticultural Society, Vol. I, p. 31), who appended to the formal description the note "the plants are attacked when quite young, and have a peculiar aspect by which they may be known at a distance." Among its other host plants are Papaver somniferum, P. dubium, P. Argemone and Meconopsis cambrica, and its presence on these plants is not uncommon. No records have been traced of the disease occurring in Papaver orientale, P. nudicaule, P. alpinum, or on the Shirley Poppy, although this does not imply that they are not subject to attack.

Some mycologists, notably Gäumann (see *Beiträge zur Kryptogamenflora der Schweiz*, Band V, Heft 4) believe that P. arborescens may be a composite species, or, at any rate, consists of a number of strains, each of which only attacks a particular host plant. Such specialisation is known to occur in the "rust" fungi. Small differences in form and size of the spores may be traced in the Poppy parasite, but, as far as I am aware, no experiments have been carried out to test the pathogenicity of the fungus on various hosts, and certainly none on Blue Poppies. Until this has been performed and the existence of definite strains proved by experiment, one can only consider the fungus as having a large range of hosts, and be prepared for our garden Meconopses to be infected by spores from any other member of the Papaveraceae.

A statement may be made here as to the occurrence of the Peronospora disease of Poppies in countries outside Britain. In Europe, the fungus has been recorded from most countries on one or other of the hosts already mentioned. It is, however, best known on the Opium Poppy, and during recent years local outbreaks of some severity have been recorded from Austria and from Yugoslavia, where, as is well-known, this Poppy is cultivated for the seeds, which are used for flavouring cakes and sweetmeats.

The importance of the Opium Poppy blight in the east may be judged from the fact that Watt, in his *Dictionary of Economic Products of India*, devoted six pages to the subject and summarises the lengthy account given by J. Scott in his *Manual of Opium Husbandry*. Butler, in his book *Fungi and Disease in Plants*, gives a more up-to-date account, and states that it occurs every year in the Opium-growing tracts in Bihar and the east of the United Provinces. In some years there are localised attacks of great severity, and occasionally epidemics over considerable areas, for which spells of damp humid weather are responsible. Butler further remarks that in the moist climate of Lower Bengal the ornamental varieties of P. somniferum suffer so much that they are as a rule not grown in the Calcutta Botanic Garden. The fungus is also stated to occur in Algeria, Egypt and Japan.

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* As a result of recent investigations, the Kew and Edinburgh botanists are agreed that M. Baileyi is probably a geographical form of M. betonicifolia (using that name in a wider sense than originally defined). See note entitled, "The Status of Meconopsis Baileyi," by G. Taylor, *Gard. Chron.*, Jan. 22, 1929, p. 66.

* The only other fungus which could be mistaken for Peronospora is the common mould, Botrytis, which attacks dead tissues and which is familiar enough to most gardeners.

Origin of the Disease in Britain.

There are clearly two possible explanations as to the origin of the outbreak of Peronospora in Meconopsis in these islands: (1) That the fungus was introduced from the east by means of resting spores mixed with the seeds or, (2) that it has spread from the infected Papaveraceae in our gardens to the newly-introduced species of Meconopsis, this being effected either by air-borne conidia or resting spores in the soil. The balance of evidence is strongly in favour of the latter, although proof has not been supplied by actual observation.

With regard to the first alternative, if the Himalayan Meconopses have their own particular strain of P. arborescens and cannot be infected by spores from Papaver, Meconopsis cambrica, or other members of the Papaveraceae, it follows that contaminated seeds is the only possible explanation. It is well-known that in the Corn Poppy resting spores of the fungus are produced not only in diseased leaves, but in the flowers and even in the stamens, and it is possible that they may form also in the ovary wall. Flowers of the Opium Poppy are similarly affected. Hence, it seems conceivable that Meconopsis seeds contaminated with resting spores might easily have been received. It should be remembered, however, that such diseased capsules would almost certainly be shrivelled and devoid of seeds, and would thus be disregarded by collectors.

The following definite observations lend no support to the view that the disease has been introduced with the seeds. The fungus has never been noted on plants in the seed-pans or in the early stages of the growth of seedlings raised in this country; and, at Edinburgh particularly, where many thousands of plants have been reared, all have been healthy. If the seeds were contaminated, the disease would almost certainly have shown itself in the young seedlings.

With regard to the second alternative there is, except in one case, no definite information as to the origin of the outbreaks. In the Perthshire garden, however, there is strong presumptive evidence that infection arose from Meconopsis cambrica. This evidence was supplied by Mr. Andrew Harley, of Blinkbonny, Kirkcaldy, who wrote as follows:—"The Meconopsis grandis and M. integrifolia in Perthshire were grown in soil where M. cambrica had grown for many years. In this part of the garden the plants suffered very badly, much more so than in other parts." M. cambrica is known to be attacked by Peronospora, and there can be no reasonable doubt that in this instance resting spores were present in the soil. Possibly, also, odd seedlings of this species affected with the disease occurred around the bed, and from these air-borne conidia would have been distributed.

Methods of Control.

The recommendations given below are for those who wish to take all possible steps to prevent an outbreak of Peronospora. As already indicated, there is no cause for alarm, and when an outbreak occurs, serious development need not necessarily be anticipated, except in damp, warm weather. But many readers prize very highly their collection of Meconopses, and for such full, even if rather elementary, instructions are appended.

(1) Isolation from other Papaveraceae.—It is believed that all existing outbreaks have been due to local infection, and that this may take place by means of spores blown from the leaves of infected Papaveraceae in gardens, or from the Corn Poppy in fields. It is of great importance, therefore, to keep Meconopsis plants isolated from other Papaveraceae in the garden, and to prevent, if possible, the common Red Poppy developing as a weed in the immediate vicinity of the beds.

(2) The Avoidance of Contaminated Soil.—Those outbreaks which have not arisen from infection by air-borne spores must have almost certainly developed from resting spores present in the soil. Such resting spores would be present if M. cambrica or any species had been attacked by Peronospora, and the affected leaves had been allowed to fall to the ground. As a precaution, it would be unwise to plant a Meconopsis in a site where any of these plants had been grown, since, although unobserved, Peronospora may have existed. It is obviously most important not to plant Meconopses in spots where disease has occurred previously, unless great care has been taken to remove diseased foliage before it fell to the ground. For valued species, it would be best to make new beds far removed from the old site.

(3) Varying Susceptibility of Species.—Different varieties of the Opium Poppy are known to vary markedly in their susceptibility to the disease, and it is practically certain that the various species of Meconopsis will be found to show similar variation. Further observations are required, but it would appear that M. betonicifolia and M. grandis are the most likely to be seriously injured. It would be advisable, therefore, to give these species special care in the way of the most favoured sites.

(4) Treatment of Attacked Plants.—Should the disease develop, treatment will vary according to the number of plants involved and the value placed on each individual. Comfort may be derived from the knowledge that a spell of bright dry weather will probably check its development and its spread. If observed in the early stage, it would be advisable to remove with scissors infected leaves or parts of leaves, and collect these in a cardboard box which could be burned *in toto*. If not noted until spots are large and numerous, it may be advisable to sacrifice entire plants. This, however, should be done with care, since the spores are easily shed and wafted away. Special watch should be kept in spring on plants which showed traces of the disease the previous autumn.

(5) Disposal of Diseased Material.—Old, diseased foliage contains both types of spores, the summer conidia on the surface and the resting spores within. It should therefore be taken away with as little shaking as possible, and placed in a box and burned. It should be remembered that after handling diseased plants the hands are liable to be contaminated by spores, and that it would be unwise to touch healthy plants.

(6) Old Plants.—It has been noted that the disease sometimes develops rather extensively on the old foliage after the plants have flowered. Old plants, therefore, if not wanted for seeds or other purposes should, if disease is feared, be dug up, carefully removed and burned. All dead leaves fallen to the ground should naturally also be collected and burned.

(7) Disposal of Poppy Refuse.—It would be advisable to make a point of burning all old Poppy plants and also Meconopsis cambrica, rather than allowing them to decay on the ground or be thrown on the rubbish heap, since, although unobserved, the disease may have been present and the old plants may harbour resting spores.

(8) Fungicides.—So far, no exact experiments have been carried out with the use of fungicides. It is possible that a liquid copper fungicide applied to both sides of the foliage would be effective as a protective coating against germinating spores. No soil fungicide is known which will kill the resting spores.

Further Research.

The present article furnishes a general account of the parasite concerned, records the occurrence of the disease in Britain and suggests treatment. Research is now needed on the Meconopsis disease itself. Of the many problems which require investigation, one of the most important from the horticultural standpoint is the question of the existence of physiological strains within the species Peronospora arborescens and, if these be found to exist, to ascertain from which of our wild or garden Poppies the Meconopses can be infected. Research on infection by resting spores from soil known to be infected is also required, and also on the length of time these spores retain their vitality in soil. The value of the application of a fungicide, either in powder or liquid form, is naturally in need of early investigation. From the scientific standpoint, the fact that the fungus develops easily and rapidly in Meconopsis and goes through its whole life cycle, including the sexually produced resting spores, renders it a useful subject for conducting research on this interesting and important group of parasites.

The disease does not occur at Kew, and it is inadvisable to introduce it even for experimental purposes. The research is therefore being undertaken at Wisley (where the fungus already exists), and is in the hands of Mr. Donald E. Green, the mycologist on the staff of the Royal Horticultural Society's gardens. *A. D. Cotton, Kew.*

HOME CORRESPONDENCE.

Root-stock Problem in Apple-growing.—I was pleased to see Mr. Cobb's reply in your issue of January 19, p. 52, to my notes on the above subject in connection with commercial Apple-growing. His statements are very reassuring, but not altogether consistent with the views of several market growers. Mr. Cobb states, "The fact that we import millions of pounds-worth every year is proof that there is a market here." Quite so! The fact that the foreigner has to show us that there "is a market here" is of no credit to our commercial growers, but rather the reverse. Would it not be much better if English growers could monopolise the markets instead of the foreigner, as is the case now? It may be stated that is what English growers are trying to do, but they have been trying for a good many years. What I think is generally misunderstood is that, for various reasons—climatic conditions, etc.—fruit growers in this country are severely handicapped when competing with the foreigner. According to Mr. Cobb, all one has to do is to produce high class fruits and, having produced them, they can be disposed of profitably. That may be so in isolated cases, but is it so generally? If Mr. Cobb can answer this query in the affirmative, then I shall indeed be pleased, as I should like to see many more thousands of acres under Apple cultivation in this country. But, as I hinted above, it is not always that our fruits are inferior, it is the cost of production which seems to me to be the drawback. The same may be stated of Grapes where quantities are concerned, for foreign Grapes have the monopoly. Big market growers at Worthing, etc., have destroyed their vines. I quite agree that this country is capable of producing the best fruits in the world, hardy or otherwise, but can we produce them at a profit? Mr. Cobb states there has been a lot of ink spilled over the packing and grading of home-grown Apples, but adds that it is now admitted that the English grower has nothing to learn from overseas. Probably he has finished his education! Getting back to the "root of things," I should like to state that what really prompted me to write about the root-stock problem was that several people I know wondered as to where the "problem" lay. Why a problem? I know an experimental station where there are trees that have been planted upwards of twenty-five years, and they are admitted to be all that could be desired, so far as fruiting and uniformity of growth are concerned. These trees are not on selected stocks, yet, although the idea is not new, I daresay that in a few years' time, all our commercial growers will adopt the American method and graft direct on to the root. In fact, I have reason to believe this subject is receiving attention now at some of our experimental stations. But are we not behind in this? Overseas they have practised it with success for the past twenty-five years, all trees, of course, being grown as standards, as they will here eventually. *H. Howard Grace.*

Parrotia persica.—The gardener brought in some seeds which he found lying on the ground under a Parrotia persica. On consulting W. J. Bean's *Trees and Shrubs Hardy in the British Isles*, Vol. II, p. 122, I find, "Seeds afford the best means of increase, but failing these, it may be propagated by layers." We have not seen seeds in previous years, and could hardly have failed to notice them had they been forthcoming. The little "nuts" look very tempting, and should form attractive morsels for the mice who devour the seeds of a Eucryphia pinnatifolia which is close to the Parrotia. Possibly, our tree has only now reached the age at which fruits are produced, or it may be that the favourable summer and autumn of 1928 were accountable for their appearance. Our tree is some forty years old. *A. C. Bartholomew, Reading.*

Rainfall at the Cheshire School of Agriculture, 1928.—The total rainfall, as recorded in these gardens during 1928, amounted to 32·39 inches, that is, ·38 inch less than the total for 1927. The heaviest rainfall for twenty-four hours occurred on June 7, when ·90-of-an-inch was registered. The two driest months were May and September, when ·84 and ·90 inch were registered respectively. In June the rainfall amounted to 4·62 inches; this was the wettest month of the year, with twenty-three rainy days. There were 253 days on which ·01-of-an-inch or more was registered, and 168 days on which ·04-of-an-inch or over was recorded. The driest period was from July 8 to July 20, when there were twelve fine, dry days. The hottest day was on July 15, when the temperature rose to 87° in the shade. The coldest day was on December 14, when the temperature fell to 15°F. only. There were 112 days when no rain fell. The year 1928 was a good year—the crops were excellent and very healthy. It was also one of the best fruit years we have had. The above records are so similar to those of Mr. Allan's, of Tirley Garth (p. 57), that I thought they would interest your readers. *W. E. Shewell-Cooper, C.D.H. (Lond.), Horticultural Superintendent, Cheshire School of Agriculture.*

Gardeners' Pay and Status.—Having engaged in horticultural work all my life, and having foreign experience, I, with your other correspondents, consider that something ought to be done to protect gardeners against those who call themselves gardeners, know little of the work, and obtain employment at a low wage. I have been a life-long reader of *The Gardeners' Chronicle*, and during the war had it sent me, week by week, in Palestine, the Sudan and central Africa, and in places where I used to visit Kew men and endeavoured to learn all I could horticulturally. Since the war, I have taken up the profession of jobbing gardening, and I find it difficult to make ends meet, as the people in this part of Essex will not pay a decent wage for a professional man, so long as there are policemen, postmen, railway men, greengrocers and farm labourers going round in their spare time doing the work for sixpence to tenpence per hour. Is this what gardeners left their jobs in 1914 for? I can sympathise with *B. C. C. Button, Cranham.*

Perpetual-flowering Carnations from Seeds.—Where time and space permit, raising Carnations from seeds is a fascinating and interesting hobby, and although there are numerous varieties already in cultivation, there are possibilities of still further colours and shades as an additional inducement to try one's luck with seedlings. Seeds are easily obtained by means of hand fertilisation, but it is advisable to select the finest plants for the purpose, and as seedlings never come true to the parent plant, it is useless to try to raise a batch of any one particular variety from seeds. Several leading Carnation growers offer seeds at a reasonable price, which is, perhaps, preferable to saving one's own, for by saving it one knows the parent plants, whereas by purchasing it one is in the dark as to the parentage—a more sporting chance. Seeds may be sown at any time of the year, although it is preferable to sow them in the autumn in sandy loam, in pans, place them in a temperature of 60° to 65°, and cover with a sheet of glass. Germination should take place in a few days, when the pans, should be placed near the roof glass. Prick off the seedlings so soon as they are large enough to handle, using good sandy loam, and taking care not to apply too much water, as overwatering may cause the seedlings to damp off. When the seedlings are large enough, pot them into small sixty-sized pots in a similar compost, and keep them near the roof-glass. By the spring they should be gradually hardened to a temperature of 50° to 55°, and subsequently may be grown with the season's batch of rooted cuttings. They should be stopped once, and when rooted sufficiently potted into four-inch pots, using a compost of good loam, mortar rubble, wood-ash and a dusting of bone-meal, with an addition of sand. As a percentage of the seedlings are sure to come single, it is not advisable to pot them on into large pots, five-inch or six-inch pots being ample; neither is it advisable to stop the plants more than once, but to let them flower so soon as possible to ascertain their quality. If the plants are only stopped once, they should flower within fifteen months from the time of sowing, and by flowering them in this way the singles can be discarded so soon as detected. From a small sowing of hand-fertilised seeds sown in autumn, 1927, I raised fourteen plants, eight of which came double, with flowers of good size and quality, the colours being two yellow-ground Fancies, one white, two reds, one red-flaked on crimson, one flesh-pink, and one deep rose-pink; this gives an idea of the colour variations one obtains. *A. J. Turner, Newton Park Gardens, Burton-on-Trent, Staffs.*

Partial Soil Sterilisation.—I am again writing to answer some of Mr. Summerfield's queries and criticisms (see p. 67). (1) I would point out, first of all, that we have carefully tried all known methods of soil sterilisation for a year, including the method suggested by Mr. Holmes Smith; (2) that in our baking method the soil is only brought up to 210°F., and thus the beneficial bacteria are not destroyed, as Mr. Summerfield suggests; (3) even with completely sterilised soil, there would be reinfection from watering with ordinary water (the only way to prevent such reinfection would be to water with sterilised water); (4) in the baking process the soil emerges still damp—not dry as powder—and so it is impossible for plant foods to be lost as "gas" any more than it is with steaming. In my opinion, we want a cheap and yet efficient machine, and in the Reaseheath steriliser we believe we have it. *W. E. Shewell-Cooper, Horticultural Superintendent, Cheshire School of Agriculture, Reaseheath, Nantwich.*

——I would suggest to *G. W. M.* (p. 107) that he should start sterilising his soil much earlier. There is always room in empty houses to place it after Christmas, and a temporary floor is easily formed. I should never dream of sowing seeds in warm, sterilised soil; I turn it over frequently for six weeks before using it for seeds, and find it much better thus treated. Soil should not cake up if used at the right texture. *Interested.*

Lapagerias.—It would not be easy to add anything to Mr. J. Comber's practical information on the cultivation of these beautiful flowers, (*Gard. Chron.*, February 2, p. 76) and my object in writing is quite different. It is to ask if any readers remember the beautiful display which, in the old days, was a feature of the great corridor in the once-famous Royal Exotic Nurseries of Messrs. James Veitch and Sons, at Chelsea. It is just fifty-two years since I first saw this wonderful picture, and it made an ineffaceable impression on my mind. I had been taken to the nurseries by my father with a view to an engagement, and this having been promptly settled by a kindly nod from the chief, whom I came to love and respect so deeply, I had for several years ample opportunities of seeing the display again. It was an annual feature, and was greatly admired by all visitors. It may be that some veteran or other whose eye happens to fall on this note may recall it as vividly as I do after more than half-a-century. If so, he will share in my appreciation of Mr. Comber's admirable article, and hope that it will tend to revive interest in these lovely flowers. *W. P. W.*

Number of Florets in an Exhibition Chrysanthemum.—I, like Mr. A. W. Warner (p. 107), was curious to know how many florets there were in an exhibition Chrysanthemum bloom, therefore, on December 16, 1928, I chose a very good bloom of William Turner, and to my great surprise found it to contain the amazing number of 2,112 florets. *Ralph E. Street, Gardener to The Royal School for the Blind, Effingham.*

SEED POTATO INSPECTION.

Some Reform Needed.

We are at the period of the year when seed-sets of Potatos form a very important item in the agricultural outlook. Than in the northern half of the kingdom, there is no district in the British Isles more famed for its seed Potatos. A magnificent connection has been built up, and it is pleasing to note that not a little of this fine work has been done by skilled gardeners who, anxious to better their lot, have forsaken the garden to devote their whole time, skill, and energy to the production of seed Potatos. The inspection of seed Potatos by the Scottish Department of Agriculture is, however, causing some perturbation in seed-growing districts. In this respect it may be interesting to many growers to have the views of Mr. John Chisholm, Ladysbridge, Banffshire, whose reputation as a seed Potato grower stands deservedly high. Discussing the matter, Mr. Chisholm states that since the Board (now Department) of Agriculture for Scotland instituted a scheme of crop inspection for purity some ten years ago, remarkable progress has been made in the production of reliable seed-sets. The scheme, however, may now be said to have achieved its object so far as purity is concerned.

Thanks largely to the work of the officials of the Department of Agriculture, whose zeal and efficiency I heartily recognise, it is coming to be more and more widely recognised that varietal purity alone is not a sufficient qualification for good seed-sets, and that the factor of health is of even greater importance. This point was demonstrated at East Craigs in August last year, when Mr. Adam Miller, the official demonstrator, stated that seed-sets having a purity of 99·5 per cent., but badly affected with virus disease, would give a very much poorer yield than a healthy stock of only ninety per cent. purity.

Recognising this, and in order to encourage the production of healthy stocks, the Department recently instituted a "stock-seed" scheme, under which a stock-seed report is issued in respect of crops which reach a standard of purity approximating 100 per cent., and which are apparently free from the degenerative or virus diseases. Potato-growers will be at one with the object in view, but one may be permitted to express a doubt as to whether the Department is proceeding on the right lines. Last year the Department's policy was to withhold their stock-seed report from stocks that did not, in the opinion of the inspector, show complete freedom from the symptoms of virus disease, notwithstanding the fact that there was not in existence a crop of certain well-known varieties that could satisfy so stringent a test. Therefore, under present regulations, interpreted in the strictest sense, there is nothing to distinguish a superlatively healthy crop of 100 per cent. purity from a crop of similar purity in which degenerating disease is rampant. This is obviously unfair, both to the producer of the healthy seed-sets and to the prospective buyer, who, so far as the Department is concerned, does not know where to apply for the healthiest stocks that are available.

It is not suggested that the "stock-seed" report should be discontinued, or that it should be granted in respect of any crop that has not attained the highest standard of health and purity, but it appears to be eminently desirable that outstandingly healthy crops, which have not quite reached the standard of perfection set by the Department, should be differentiated from crops which are seriously affected with virus disease, although 99·5 per cent. pure. Be it noted, too, that it is obviously much more difficult to determine the entire absence of the symptoms of virus disease in a growing crop than to estimate the percentage of purity. Indeed, the former is work that can be safely entrusted only to experts, and even experts have been known to differ seriously as to the presence or absence of certain diseases, such as mild mosaic. This uncertainty also condemns the perfection policy as being, at present, impracticable and futile.

In the opinion of many growers, the Department's T.S. (purity) certificate is now of very little value in transactions for the sale of seed Potatos, except in so far as it assists growers and merchants to comply with the regulations of the Seeds Act, 1920, and the Wart Disease Order, 1923. Therefore, for the further improvement of seed-sets, there is urgently required a new certificate in which the emphasis will be laid on health. The terms and conditions of such a certificate is a matter for consideration and discussion by the Department's officials and representatives of Potato-growers and merchants. Meantime, I venture to suggest :—

(1) That there be instituted a new certificate of two grades, the limits of which shall be determined by fixed percentages in (*a*) health (*i.e.*, freedom from the symptoms of severe mosaic, blackleg and leaf-roll), and (*b*) purity.

(2) That the T.S. certificate in respect of the growing crop be continued in so far as it assists growers and merchants to comply with the Department's regulations under the Wart Disease Order, etc.

Mr. Chisholm states that he has discussed this question with a well-known seed-Potato merchant, whose reputation for handling healthy seed-sets is extremely high, and here are his suggestions —

(1) That the stock-seed scheme be continued, but improved in the light of recent experience.

(2) That T.S. and Grade A certificates in respect of the growing crop be granted where the percentage of purity and freedom from blackleg, leaf-roll and apparent severe forms of mosaic exceeds an individual and cumulative percentage to be arranged.

(3) That a report, complying with the requirements of the Regulations under the Seeds Act, 1920, be issued, in which the individual and cumulative percentage of defects would be higher than in suggestion No. 2.

I place my friend's views in juxtaposition with my own, because it is manifest that, in the elaboration of an amended scheme, differences will emerge, depending to some extent upon the angle from which the question is approached. Space will not admit of details, but I hope what I have written will make Potato growers and merchants discuss the question with a vew to bringing about some reform in the Department's present scheme of inspection. *W. K.*

THE ECONOMICS OF FRUIT-GROWING IN ENGLAND.

(*concluded from p.* 127).

With regard to the old orchards, mostly planted from 1907 and onwards, I give the actual receipts per acre, from which have been deducted all marketing costs, such as commission, tolls, and transport, but not cost of production. The table was compiled from our books in the first case to ascertain, if possible, the most profitable varieties of Apples to plant on the new farm :—

Average Receipts per Acre per annum for seven years (1919-25). Bush Trees on Paradise, planted 1907.

King of the Pippins ... ... (262 bushels at 7s. 6d.)	£99	0	0
Newton Wonder ... ... (230 bushels at 8s. 0d.)	92	6	0
Quarrenden ... ... (173 bushels at 8s. 8d.)	74	14	0
Bismarck ... ... (436 bushels at 6s. 2d.)	135	8	4
Worcester Pearmain ... ... (433 bushels at 6s. 2d.)	133	0	0
Cox's Orange Pippin ... ... (81 bushels at 19s. 9d.)	75	0	0

These orchards were originally interplanted with Black Currants and Strawberries, which two crops alone recovered the total costs of establishing the permanent Apples, so that by the time the Apple trees came into bearing there was no debt.

This interplanting of temporary soft fruits is not done much in the Dominions, partly owing to incompatability of climate and the difficulty of marketing. In England, however, it is usual and most profitable. The annual cost of production after about the tenth year has been ascertained to be round about £40 per acre, 3s. per bushel, varying, of course, according to the needs of the varieties and kinds in question.

The figures are much reduced as a consequence of neglect during the war, necessitated by the lack of labour during that period. Since then there has been a steady upward trend in price and a steady increase of crop. For instance, Worcester Pearmain averaged 7s. 2d. in 1925, 7s. 6d. in 1926, and 9s. 4d. in 1927. A younger orchard of Worcester Pearmain gave an average of 10s. 9d. in 1927, and an orchard of the same variety grown as half-standards on crab stocks planted in 1913, gave an average of 10s. 3d. in 1927.

These higher prices are the direct outcome of improvements in pest control, more thinning and better marketing. Our experience is that Apples of high grade are rising in price, and those of lower grades are falling. So low in price have the lower grades become that we no longer pick them, but after the best fruit has been picked the remainder is shaken off the trees and allowed to rot on the ground. So long as £5 per ton can be got for those low grades in bags to jam factories they pay to handle—not otherwise. The prices mentioned above include all grades, from specials packed in dozens to the lowest grades sold to jam manufacturers.

Coming to the cost of establishing, so far as we have ascertained it on the new farm, we found that in the first period of about eighteen months of the plantations, *i.e.*, from November, 1925, when we took possession, until June 30, 1927, we had spent from £27 per acre in the case of the cheapest form of fruits, to £42 17s. 0d. for the dearest combination of trees and bushes. The lower cost was for forty acres of one-year-old Czar Plums interplanted with two-year-old Black Currant bushes. The higher cost was incurred in the case of thirty acres of two-year-old Cox's Orange Pippin trees interplanted with two-year-old Gooseberries. Many other combinations were planted, such as three-year-old trees with no intercrops, half-standard Plums with Raspberries between and also intermixed Plums and Apples. The average cost during the first eighteen months for 170 acres of land planted to permanent and temporary fruits was £36 2s. 0d. per acre.

For the year ending June 30, 1928, an extra capital outlay of £5 11s. 2d. per acre was incurred, making a total debt of £41 13s. 2d. per acre. From now on the interplanted soft fruits should more than balance the annual outgoings, and by the time the permanent fruit trees are in full bearing the fields should be free of debt. As an illustration of this the field planted with Plums and Raspberries has freed itself of debt with the first crop of Raspberries. The total gross return of Raspberries being two tons per acre at an average nett price of £75 per ton. Similarly, fifty-seven acres of Black Currants planted between Plums and Apples should more than pay for all outgoings next year and commence to pay off the debt of those fields. The method of accounting was as follows.

On taking over the farm, there were sundry costs, such as thrashing the late tenant's Corn, repairs to farmyards, buildings, farmhouse, cottages, sundry drains and gates. Cutting down trees and dealing with the tops, sawing wood and odd wet-day jobs, costs of implements and tools, rates—local and drainage board, tithes and Schedule A Income Tax, legal expenses and insurances, repairs to implements and general supervision. Many of these costs could well have been capitalised and spread over a period of years, but we preferred to debit each field with them at once, and they totalled £3 10s. 0d. per acre. Secondly, nearly everything is done by piecework. The farm is laid out for tractor cultivation at least one way. No preliminary manuring is done except the ploughing in of Mustard. Every July this is sown and ploughed in. Every tree has been mulched after planting at a total cost of ½d. per tree. Nearly all carting is done by tractor haulage. A rent charge of £1 per acre has been debited annually and five per cent. interest charged on all capital outlay. No provision has as yet been made for repayment of capital. This will be commenced so soon as the revenue assumes reasonable proportions. Everything has been designed to reduce costs to the lowest level consistent with efficiency. The total staff on the 275 acres (all except thirty acres being planted) is ten men and lads, augmented in spring and summer by women for hoeing. Normally, cultivation is done with two tractors (one part time) and one horse.

I have nearly come to my time limit and have not yet touched upon fruits other than Apples, but the next most important fruit is the Plum. In this case we have little to fear from foreign countries. Such as come are inferior varieties, like the French Violets and German Switchens. The canning industry is taking Plums off our markets in ever-increasing quantities. The cost of production is less than Apples, as they rarely need spraying more than once in winter. The crop is packed straight from the tree and Plums come into bearing by the fifth year and are in full crop by the seventh. Pears are not so generally grown as Apples and Plums. The earlier varieties are more profitable than the later ones in view of the heavy importations of excellent quality Pears from California and Oregon. Cherries are rapidly increasing in acreage, mostly in Kent and Worcester. Now that the import of Cherries from France is so restricted on account of the Cherry fruit-fly maggot, the future of English Cherries is much brighter. It is a crop that very many grass farms could grow without any outlay beyond the price of the trees and stakes. Grass under Cherries must be fed regularly, preferably by sheep. Cherries come into bearing about the seventh year and continue in profit for perhaps another fifty years. Pears, Plums and Cherries may be interplanted with soft fruits in their earlier years, the latter being capable of freeing the land of initial capital outlay long before they are worn out. The greatest pull English growers have over Dominion and foreign Apple growers is this ability to cover the cost of establishing orchards quickly, but it must be conceded that Apples in Canada and the States come into bearing sooner than ours do owing to their quicker growth in their earlier years. Black Currants are the cheapest form of undercrop but have a short life. Raspberries come next, with a life of about fifteen years. Red Currants and Gooseberries have the longest life, often remaining profitable for nearly thirty years.

The quickest return is to be got from Strawberries. They come into bearing their second summer, and give three crops before needing removal. The cost of establishing a Strawberry plantation is about £40 per acre, and owing to the very high prices now obtaining are quite the most profitable soft fruit crop.

Fruit Soils.

Such figures for Apples as I have given are obtainable from any light soil in the south of England, preferably a valley gravel, above the frost line, and preferably on a north or east aspect. As regards Pears and Plums, heavier soils are suitable, provided they are perfectly drained. Impervious sub-soils are anathema to fruit trees and mean a short life. However poor in texture a gravel may be, however coarse its particles may be, provided it is deep and naturally drained it will produce the most regular crops. The Essex Valley gravels, with their mixture of finer particles of clay between the stones, form the finest soils for all forms of fruit. It is being found, however, that fruits will succeed on a great variety of soils, provided the drainage is perfect and they are high enough out of the frost line. These are the predominating factors in the success of fruits. Most other soils in such a condition and position will, however, grow fruits profitably.

One other factor looms largely in the balance sheet of a fruit farm, and that is *strain*. It is being found with fruit as with live stock, names of varieties or breeds mean much less than the strain from which they are bred. Owing to the habit of fruit trees "sporting," various undesirable strains have been distributed. It is imperative that the source of propagation be examined carefully as to purity, vigour and productiveness. A buyer of fruit trees should demand to see the parent trees or bushes from which young stock is propagated and satisfy himself that the strain is a good one. The rapid decline in the production of Strawberries and

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* A Lecture delivered by Mr. W. P. Seabrook, of Chelmsford, at a meeting of The Farmers' Club, held at the Royal Society of Arts, Adelphi, W.C.2, on Monday, February 4, 1929.

Raspberries in particular is very largely due to propagation from worn-out strains, and also depends upon the proportion of virus diseases such as mosaic in Raspberries and reversion in Black Currants. These incurable diseases can only be avoided by rigorous selection and, as in the case of cancer in the human system, can only be eradicated by removal. There is no cure.

Summing Up.

The essential requirements for success in fruit-growing are, after all, similar to those for most other products. Well-drained soil, comparative freedom from frost, careful selection of strain to start with, control of pests and diseases, and, above all, intelligent presentation to the buyer. The production of a good sample is the first need, and, thanks to modern research, this is easier now than ever before. The careful picking, grading and packing, combined with scientific marketing, is the next need. Low grades will not become high grades by careful grading and packing, but high grades will make very much higher prices when properly handled for sale. Low grades must gradually be eliminated and must disappear from our open markets.

The small grower can—and often does—produce a better sample and pack it better than his large neighbour. His cost of production may be higher, but the National Mark scheme of marketing will put him on the same footing as his bigger neighbour and enable him to overcome the drawbacks incidental to his smaller volume and lack of continuity of supplies. Otherwise he must adopt co-operative or collective selling, so that the volume of produce is enough to bear the costs of organised marketing.

Example of Average Annual Cost of Production of Apples.

(Per acre of 200 trees, bushes on Paradise, tenth year onwards, assuming cost of establishing has been defrayed by interplanted soft fruits.)

	£	s.	d.
Rent	2	0	0
Pruning at 3d.	2	10	0
Spraying—			
Tar oils at 6d.	5	0	0
3 lime sul. lead at 3d.	7	10	0
1 ploughing		9	0
3 cultivations		6	0
Brushing grass	1	0	0
Thinning fruit at 1½d. (say 300 bushels)	1	5	0
Picking at 2d.	2	10	0
Carting		10	0
Packing and Carriage	15	0	0
Manure—2 cwt. nitrate of soda ...	1	0	0
2 cwt. potash	1	0	0
	£40	0	0

LAW NOTES.

MARKET GARDENERS v. TOWN COUNCIL.

Messrs. J. and R. Ferguson, Market Gardeners, Chattan Drive, Nairn, raised an action in the Court of Session, Edinburgh, some weeks ago against the Town Council of Nairn, claiming £3,615 damages for an alleged breach of undertaking contained in a letter dated 1921, by which the defenders undertook to reinstate, to the satisfaction of a partner in the pursuers' firm, the water supply to the nursery and market garden carried on by the pursuers at Nairn. The summons also contained a conclusion for implement of the obligation, or alternatively, for payment of £150.

When the case was about to go for proof before Lord Pitman, Mr. J. L. Wark, K.C., Senior Counsel for defenders, intimated to His Lordship that he and Mr. Macgregor Mitchell, K.C., Senior Counsel for pursuers, had been able to arrange terms of settlement satisfactory to both parties. On the one hand, the defenders got out of a troublesome litigation, and on the other the pursuers would have their water supply for their garden in a shape satisfactory to them. While the terms of settlement have not been actually disclosed, it is understood that they included a payment of £350 to pursuers.

MARKET FRUIT GARDEN.

January, in my district, was a particularly favourable month for work on the fruit farm. With a rainfall of only 1·33 inch, it was a dry month, in marked contrast to January, 1928, when there were 4·26 inches of rain. This made all the difference to progress with winter spraying, particularly as there was remarkably little wind. Most of the spraying has now been done, and on only one occasion did rain fall before the wash had dried on the trees. Last year it was the rule rather than the exception for rain to follow in less than twenty-four hours after spraying. The makers of tar-distillate washes advise that no spraying should be done in frosty weather. It is, however, almost impossible to avoid this. One cannot, of course, spray while it is actually freezing; but one must take advantage of the none too numerous fine days that occur during winter, and these are generally followed by frost at night. If frost occurs before the trees have dried, the wash freezes on them; but I have not found that this does any harm or spoils the result.

Although it has not been a hard winter, fruit trees and bushes are backward. Buds do not appear to have made the slightest movement. The pistillate flowers of Cob Nuts generally appear before the end of January; but this year none could be found at that time. It is to be hoped that this means that there will be a late flowering period, usually a preliminary to a good fruit season. I have always noticed that, when the trees hold their leaves late in autumn, as they did last year, they make a late start in the following spring, no matter whether the winter be mild or severe. It seems that they take a resting period of a certain length, and that this is not varied to any extent by the nature of the winter weather.

Control of Growth and Bearing.

Fruit-growers have always desired to gain as much control as possible over the growth and bearing of their trees. At one time, in private gardens, root-pruning and even transplanting were frequently adopted as a means to this end. With present-day knowledge of dwarfing stocks and the influence of more moderate and sensible methods of pruning the head, I imagine that these laborious practices have largely gone out of use. For the commercial grower they were seldom possible, owing to the expense involved. Other means had to be sought for controlling growth and bringing the tree into the bearing habit. Just now growers seem to be striving after these results, and after the production of large and highly-coloured fruits which usually accompany them, by means of several interesting methods.

In the Wisbech district, where fruit trees make very free growth and are somewhat slow to come into bearing, there is a great revival of interest in the old practice of bark-ringing. The ringing, usually of branches rather than of the main stem, is done round about the blossoming period. As a result, there is a reduction of growth and an accumulation of carbohydrates in the portion of the branch above the ring, leading to the formation of fruit buds during the season in which the operation is performed, and the production of fruits in the year following. All gardeners have seen similar results following the partial ringing of a branch by canker. Investigations at Long Ashton have shown that ringing is valuable as a temporary expedient for use on vigorous, over-vegetative trees which, because of their excessive growth, do not form flower buds in sufficient quantity. It may be considered, in fact, to be a substitute for root-pruning, suitable for application in similar circumstances.

Whether this method can be utilised continually, as part of the ordinary routine of fruit culture, as is being done in some places in the eastern counties, remains to be seen. One grower has carried out the practice for eight years, apparently re-opening the rings each spring. It should be explained, however, that the method of ringing followed in the eastern counties is not the same as that tried at Long Ashton. Instead of removing a complete girdle of bark from the branch or stem, two half rings are removed, on opposite sides, about three-quarters-of-an-inch wide and four to six inches apart. This probably renders the ringing less dangerous than complete girdling. The wounds are painted or tarred to hinder the entrance of disease.

An Intensive System.

A more ambitious method of control is the intensive system of fruit culture devised by Mr. A. H. Lees and described by him in the issues of *The Gardeners' Chronicle* dated May 12 and 19, 1928. Apples are planted as maidens on Type II Paradise stock, usually three feet by six feet apart. The aim is to form trees which might be described as coming between single cordons and dwarf pyramids. Perhaps they are more clearly defined as self-supporting cordons with radiating laterals about eighteen inches long. In order to secure these laterals just where they are wanted, knife-edge ringing is practised freely on the main stem. Sub-laterals are converted into fruit spurs by the annual use of Lorette summer pruning. A few years after planting, a further means of controlling growth is introduced in the form of a cover crop of Red Clover. By this system the ground is thickly populated with trees which have a larger bearing area than cordons and are free from the need for expensive supporting fences. The trees come into bearing quickly and carry fruits of fine colour.

The simplest and most obvious way in which to control growth and secure early bearing is to plant trees on a dwarfing stock. Some commercial growers now possess young plantations of Apples, mainly Cox's Orange Pippin, on Malling No. IX stock (Jaune de Metz Paradise). It will be interesting to see whether these will not give as good results as Mr. Lees' trees with considerably less trouble. Except on poor soils, where this stock is too dwarfing in effect, it gives most attractive little trees which often begin to bear in the third year after planting, and subsequently carry heavy crops of very large Apples.

Grassed Orchards.

Finally, we come to grassing down as a means of checking growth, bringing the trees into bearing, and producing fruits of high colour. I believe that much will be heard about this method in the near future, for research workers are beginning to explore its possibilities. Grass orchards of standard trees, in which the herbage is kept short and the land manured by grazing stock, are, of course, familiar to every one. Plantations in which the grass is mown and used as a mulch, and feeding done by the use of chemical fertilisers, are another matter altogether, and should be more under the grower's control. After having tried this system for ten years, I feel that I am only just beginning to know something about it. The effect of grassing down is very similar to that of root-pruning. Over-luxurious trees are checked in growth and quickly thrown into bearing. In time the trees will show symptoms of severe nitrogen starvation unless steps are taken to prevent this. Evidently feeding has to be much more generous than I used to imagine. When the problem of manuring has been solved, I believe that the use of grass in orchards will become recognised as one of the best means of producing fruits of highly saleable quality.

A New Winter Wash.

I am finishing my winter spraying with a proprietary wash made in accordance with the Long Ashton formula from highly soluble tar-distillate. The result cannot be ascertained until the summer, but I am very favourably impressed with the wash at the time of application. The sprayers find that it covers the trees more easily than the older type of tar-distillate wash, and that it does not burn their faces. While it cleans the trees very well it does not burn the grass or other vegetation under them to anything like the same extent, owing, no doubt, to the exclusion of tar acids. Other virtues are that it dries quickly and does not coat the sprayer, tank or pipes with tarry matter. Altogether, I feel that it should be a safer wash to use on the trees year after year.
Market Grower.

VEGETABLE GARDEN.

THE LEEK.

THE Leek (Allium Porrum) is a wholesome vegetable which has been grown in this country since very early times, particularly in the north and in Scotland and Wales, where it is highly appreciated, probably because of its extreme hardiness. Leeks withstand the severest weather without harm, and may remain in the open ground until required without deteriorating.

The Leek is stated to be a native of Switzerland but, although it is the ancient badge worn by Welshmen on St. David's Day, it is doubtful if anyone really knows its origin. It may have come from Egypt, where it was known many thousands of years ago. One writer thinks it originated in Druidic times, and that the plant was a symbol of Cendven, the British Ceres. Others maintain that it was the sign under which the Welsh gained a victory over the Saxons, St. David having advised them to assume the badge. Certain it is that the Rose, Shamrock and Thistle are not more honoured in the countries which have adopted them as emblems, than is this odorous potherb of which an historian has written:—

> " I love the Leek above all herbs and flowers ;
> When first we wore the Leek the field was ours ;
> The Leek is white and green, whereby is meant
> That Britons are both stout and eminent ;
> Next to the Lion, and the Unicorn,
> The Leek's the fairest emblem that is worn."

The Leek is a true biennial, that is, it continues its growth for a whole year before it prepares to flower and produce its seeds ; thus its season of supply extends throughout the greater part of the year, and by using the summer crop in a small state, it serves as a potherb for flavouring purposes throughout the year. It will grow in any well-worked soil but, like most other vegetables, responds to liberal treatment, when it attains a great size. Sowings may be made in the open ground in well-prepared seed-beds from February to April, but for most gardens a sowing made about the middle of March will suffice to provide for two or three plantations.

Where very early supplies are required, however, a few seeds may be sown in January on a gentle hot-bed, the seedlings being grown on under well-ventilated conditions and gradually hardened off for planting out about the end of March.

To obtain fine Leeks many growers make trenches for them, in the same way as for Celery, and on light soils this will be found a convenient method to facilitate the application of water, but it is not essential, and excellent produce may be obtained by growing them in drills. These should be drawn to a depth of five or six inches, about twenty inches apart, placing the plants ten inches apart in the drills. The drills afford some measure of protection to the plants in the early stages of growth, and the frequent hoeings, practised during the growing season, gradually fill the drills and blanch the necks of the Leeks. Later on further earthings-up may be made to extend the length of the blanched portion, and by this method long, perfectly blanched Leeks of the highest quality may be obtained at considerably less cost in labour than is entailed in preparing trenches.

A use for Leeks, which was more widely practised in earlier times than it is to-day, is the production of bulbs. This is effected by leaving plants in the spring, when they begin to produce flower spikes, and removing the flower-buds as they appear ; by this means the formation of bulbs at the base of the neck is induced, and these constitute a delicious vegetable of the Onion-flavoured class ; our forbears, who had a much more limited choice of vegetables than we have at the present day, used to consider these bulbs an uncommon luxury. *W. A.*

SOCIETIES.

CARDIFF GARDENERS'.

THE annual dinner of the above Association was held recently at the Queen's Hotel, Cardiff. Douglas Cory, Esq., presided, and an excellent repast was partaken of by a large number of members and friends, who were afterwards entertained to a first-class concert.

At the fortnightly meeting of the Association held at the end of January, the lecturer for the evening was Mr. J. T. Smith, of Duffren Gardens, his subject being " Trees and Shrubs." Mr. Smith dealt with his subject in an interesting manner, and illustrated it with numerous specimens. He spoke chiefly of variegated shrubs which are useful for brightening the garden during the dull days of winter, and described many in detail, including the uncommon forms of Aucubas, Elaeagnus, Osmanthuses, Taxuses, Andromedas, Pittosporums, Daphnes, Trochodendrons, Viburnums, Loniceras, Ligustrums, Skimmias, Griselinias, Hypericums, Ruscus, Grevilleas, Phlomis and Cotoneasters. He also mentioned such well-known winter-flowering plants as Garrya elliptica, Erica lusitanica and Hamamelis mollis, and spoke of the value of the variegated Conifers. His advice with regard to preparing the soil and transplanting trees and shrubs was very sound, while he also discussed tree surgery.

The competitions for the best decorative plant, and the best pot of bulbs, resulted in Mr. F. FOLK securing first prize, and Mr. L. GIBBS the second, in the former class, and Mr. E. HANN, first, and Mr. BENNETT, second, for the best pot of bulbs. Numerous points were awarded for non-competitive displays.

NEWCASTLE HORTICULTURAL.

THE January meeting of the above Society attracted a very large attendance, quite the largest for many months. The monthly competitions were very interesting, and some fine exhibits were shown. The chief prize-winners were Messrs. W. BRIGHT, T. MILLS and W. HOWARD, for Cyclamens ; Mr. J. DORAN, for Tulips ; Messrs. W. BRIGHT and T. MILLS, for ladies' sprays and gentlemen's buttonholes ; Mr. Y. R. RHODES, for Dracaena pendula ; Mr. J. DORAN, for Brussels Sprouts ; and Messrs. J. T. HALL and J. YOUNG, for Leeks. For a fine collection of Leeks, Mr. HALL gained the special monthly prize. Mr. W. WOOD was awarded the prize, given by Mrs. Hill, for the best exhibit in the show—a splendid collection of Roman Hyacinths. The feature of the evening was an instructive and interesting lecture, given by Merion Thomas, M.A., of Armstrong College, on " Plants and Air." It was illustrated by a fine collection of lantern slides.

PROFESSIONAL GARDENERS'.

GOOD progress continues to be made in the organisation of the professional gardeners of the country, and there was a large attendance at the eighth annual dinner of the Professional Gardeners' Association, which took place at its headquarters, the Guildford Hotel, Leeds, on Saturday, February 2. Mr. J. T. McCormack, President of the Association, occupied the chair, and prominent members and guests present included Mr. Harold Mitchell, President of the Bradford and District Branch ; Mr. C. H. Gartery, Huddersfield ; Mr. W. Wells, Harrogate ; Mr. F. W. Capp, Wakefield ; Mr. F. Edwards, Leeds ; and Mr. E. J. M. Edelsten, Pickering.

The Association has a membership of about 3,000, and branches have been formed at Baildon, Bradford, Harrogate and Huddersfield, while others are in process of formation at Newcastle, Sheffield and Birmingham. The Association is run on a non-union and non-political basis, its most prominent feature at present being its benevolent fund.

Mr. McCormack, in proposing the toast of the " Guests and Delegates," said the Association sought to foster amicable relations between employers and employees. He pointed out that Mr. Mitchell, the President of the Bradford branch, is an employer of professional gardeners, and, although not a professional gardener himself, is a keen horticulturist, and an active supporter of the Association. He also thanked members of the trade for their co-operation. Mr. Mitchell, responding, said that when two men worked together, although one paid wages to the other, if they could not be friends they had better part. The Association was doing extraordinarily good work, and professional gardeners who held aloof from it would lose a great many benefits. He suggested that some of the senior members should help the younger ones by means of lectures and discussions on gardening topics. Mr. Capp, one of the founders of the Association, and its first Organising Secretary, presented to the Association a framed portrait of himself, to be hung in its headquarters.

An attractive programme of music was provided.

GUILDFORD CHRYSANTHEMUM.

THE Annual Meeting of this Society was held at the end of January. The President, F. F. Smallpeice, Esq., occupied the chair.

The Secretary, Mr. Walter Miles, presented the thirty-sixth Annual Report, which dealt chiefly the annual show held last November. This was with declared to be a record from all points of view, the entries, 290 in all, being sixty-one more than in 1927. The exhibits were of a high standard all round, and the appreciation of the public was evidenced by the large attendance on both days. The report closed with an appeal for new subscribers, or further donations.

Mr. W. T. Patrick, J.P., submitted the financial statement. The total income, including a balance of £35 6s. 3d. brought forward, amounted to £209 3s. 9d. The expenses were £183 8s. 5d., being about £31 more than last year—without a corresponding increase in the receipts—which reduced the balance in hand to £25 15s. 4d.—a drop of about £10 on the year's working. This was attributed, for the most part, to a more liberal prize list.

Mr. Smallpeice was re-elected President on the motion of Mr. Joy. In accepting, Mr. Smallpeice said he appreciated the honour again conferred upon him. Mr. Patrick and Mr. Miles were re-elected to their respective offices, and the whole of the Committee was re-elected *en bloc.*

Mr. Patrick proposed a vote of thanks to Mr. Smallpeice, and expressed his pleasure that the President was able to be with them again after his long and serious illness last year.

It was decided to hold the annual show on Wednesday and Thursday, October 30 and 31, next.

GUILDFORD GARDENERS'.

Two items of especial interest marked the activities of this Society during January, the first being a very successful whist-drive on the 23rd, and the second, a social gathering on the 30th.

While such meetings are admittedly of a festive character, they yet have a serious side—they contribute to, and cement the feeling of fellowship that prevails, and at the same time serve to augment the funds whereby the more serious work is carried on.

For the whist drive Mr. A. J. Joy was Chairman of the Committee, and proved to be a genial M.C. During an interval, the President, Alderman W. T. Patrick, J.P., gave a brief address in which he made the gratifying announcement that Mr. Pettit, the Hon. Show Secretary, was receiving great encouragement in his preliminary work for the next show ; The Duke of Sutherland, Sutton Place ; Mr. Lloyd George, M.P., who has a residence at Churt, Surrey ; and Mr. Jeudwine, of Tangley Place, had promised cups, while the Earl of Onslow, Clandon Park, who has consented to become a Vice-President, had promised a Silver Medal.

In addition to the social functions, a meeting of the Association was held on January 22, when a visit was received from Mr. Lavender, of Messrs. James Carter and Co., who read an interesting paper on "Annuals." The next lecture will be by Mr. W. Auton, on March 5.

ROYAL GARDENERS' ORPHAN FUND.

THE severe weather may have been partly responsible for the small attendance at the Annual Meeting of the subscribers to this Charity, held in the Royal Horticultural Hall, on Wednesday, February 13. Probably the absence of so many members of the Committee and subscribers was due chiefly to the fact that there was no competition for the benefits of the Fund, and also, that the Charity is in a very excellent position financially.

Mr. David Ingamells presided, and was supported by Mr. George Monro and Mr. Peter R. Barr, others present being Mr. J. F. McLeod, Mr. J. M. Bridgeford, Mr. R. B. Leach, Mr. J. Wort, Mr. D. Swain, Mr. W. F. Giles, Mr. Charles H. Curtis, Mr. C. Rayner, Mr. Alesworth and Mr. A. C. Bartlett, Secretary.

The Report of the Committee for 1928 was read by the Secretary, and the accounts for the year were presented by Mr. Peter R. Barr, the Hon. Auditor, who was subsequently re-elected to that position.

EXTRACTS FROM THE REPORT FOR 1928.

Thanks to the continued support of the subscribers and donors, The Royal Gardeners' Orphan Fund has been enabled to continue its work of providing allowances towards the maintenance of the orphans of gardeners. and others in allied callings, who have been so unfortunate as to be deprived of the bread-winner of the family while they are on the threshold of life. Continued support has made it possible, not only to pay the regular allowances, but to extend them in several special instances where it has been evident that extended education would greatly improve the children's prospects by better equipping them for their life's work and, through them, benefit the country generally.

For several years the possibility of recommending an increase in the weekly payments to the orphans has engaged your Committee's attention, but they regret to report that, without a greater income, it is not yet possible to recommend any increase in the weekly allowances. The total receipts from all sources during the past year, including the balance from 1927, amounted to £3,158 1s. 6d. This sum includes a legacy from the late Mr. Will Tayler, and £35 6s. 0d,. the result of the half-crown appeal made by the late Mr. H. J. Jones. The kindly thought of these donors, who for many years were regular subscribers to the Fund, is greatly appreciated. In continuance of their financial policy, the Committee have made a further contribution towards the restoration of the Invested Funds to their pre-war position. The Annual Festival Dinner, held at the Hotel Victoria last May, was very successful, and the means of materially increasing the income of the Fund. Grateful thanks are returned to Gerald W. E. Loder, Esq., who presided and made a generous donation of one hundred guineas, and obtained a similar sum from a donor who prefers to remain anonymous. To all other donors grateful thanks are offered, and particularly to Mr. David Ingamells, who collected over £280; to Mr. Harry Miles and his helpers, who decorated the tables so tastefully; to the Stewards, and to all who contributed to the success of the Annual Festival Dinner.

The Committee announces that Samuel Wallrock, Esq., The Manor House, Stanmore, Hertfordshire, has kindly promised to preside at the next Festival Dinner, which has been arranged for May 15, 1929.

The Committee acknowledge with heartiest thanks, the valued contributions from the following gardening associations, and desire to offer the Fund's hearty thanks to the members and officials whose ready help made the contributions possible: The Royal Caledonian Horticultural Society, Altrincham and District Gardeners' Improvement Society, Sandringham Estate Cottage Horticultural Society, Southport Flower Show, Professional Gardeners' Lodge, Croydon and District Horticultural Mutual Improvement Society, Brighton, Hove and Sussex Horticultural Society, Newbury and District Gardeners' Association, Parkstone Gardeners' Association, Leeds Paxton Society, Isle of Wight Horticultural Society, Wimbledon Gardeners' Mutual Improvement Society, Bournemouth and District Gardeners' Mutual Society, Sevenoaks Gardeners' Society. West Kent Chrysanthemum Society, and Sutton Coldfield Gardeners' Society. Considerable amounts were also collected by Mr. T. H. Cook, of the Royal Gardens, Sandringham; Mr. G. J. Weston, Chatsworth Gardens, Bakewell; *The Gardeners' Chronicle*; Mr. Joseph Lytle, Garden Supplies Co., Liverpool; Mr. T. Pateman. Brocket Hall Gardens, Hatfield; Mr. Wm. Rowe, Squerryes Court Gardens, Westerham; Mr. W. Auton, Woking; Mr. C. Nippard, Bournemouth; Mr. A. Nicholl, Hursley Park Gardens, Winchester; Mr. A. H. Fulker, Reading; Mr. Wm. Austin (of Glasgow), Harrogate; and Messrs. Wm. Thomson and Sons, Clovenfords, chiefly by means of concerts and other entertainments.

It is with sincere and deep regret the Committee record the deaths, since the last Annual Meeting, of several old and greatly valued supporters of the Fund. The Rt. Hon. Lord Lambourne presided at the Festival Dinner of 1913, and as a Vice-President was always ready and willing to do everything possible to aid the Fund. Mr. H. J. Jones first became a member of your Committee in 1895, and always had the welfare of the Fund deeply at heart. The result of Mr. Jones' last appeal for the orphans has already been recorded. Mr. C. Dixon, whose death the Fund also deplores, was a valued member of Committee for a number of years; while in the death of Mr. Graeme A. Whitelaw, the Fund has lost a generous annual subscriber. The members of Committee who retire by rotation and who offer themselves for re-election are Mr. D. Campbell, Mr. Alfred Dawkins, Mr. J. E. Dixon, Mr. R. Findlay, Mr. W. J. Penton and Mr. F. C. Stainsby. For the two vacancies, your Committee wish to nominate Mr. R. C. Pulling, of Messrs. H. J. Jones, Ltd., and Mr. F. Moon, Ackwyeron Gardens, Wimbledon Park.

THE ROYAL GARDENERS' ORPHAN FUND

CASH STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1928.

RECEIPTS.

	£	s.	.d.	£	s.	d.
To Subscriptions: General ...	222	13	6			
Local Secretaries ...	26	9	6			
				249	3	0
Donations: General ...	138	18	3			
Local Secretaries ...	15	13	9			
				154	12	0
Proceeds of Annual Festival Dinner				876	15	1
Adv'ts. in List of Subscribers				24	15	6
Dividends on Stock, Interest, etc.				509	5	0
Income Tax Returned ...				53	2	11
Legacy: Will Tayler ...				27	0	0
				1,894	13	6
Balance from last Account				1,263	8	0
				£3,158	1	6

PAYMENTS.

	£	s.	d.	£	s.	d.
By Children's Allowances ...	761	15	0			
Grants in Aid	62	18	6			
Emma Sherwood Memorial	13	0	0			
Maybud Campbell Fund ...	13	0	0			
James Campbell Fund ...	13	0	0			
				863	13	6
Secretary's Salary ...				200	0	0
Rent, Insurance, Firing, Lighting, etc.	70	11	1			
Printing and Stationery...	41	13	5			
Printing and Posting List of Subscribers	47	3	0			
Audit Fee	8	8	0			
Advertising	1	17	0			
Bank Charges	3	18	9			
Postages	16	11	10			
Petty Cash Sundries ...	2	6	7			
				192	9	8
Purchase of £1,500 South Essex Water 5% Preference Stock				1,530	6	6
				2,786	9	8
Balances at 31st December, 1928—						
Cash at Bank	258	7	8*			
Cash on Deposit ...	114	0	0			
	372	7	8			
Less—Petty cash due to Secretary	0	15	10			
				371	11	10
				£3,158	1	6

Having verified the Securities and xamined the Books and Vouchers supplied to us, we hereby certify the above Accounts to be correct.

PETER R. BARR,
RICHARD A. WITTY, } *Auditors.*
Incorporated Accountant

February 8, 1929.

*Of this amount £205 9s. 0d. is required to meet payment of the Children's Allowances, on January 1st, 1929.

Mr. P. R. Barr pointed out that the nominal value of the invested funds was now £14,335 6s. 9d., as compared with £13,329 1s. 5d. in 1914; and the dividends now amounted to £496 15s. 0d., as against the pre-war sum of £397 1s. 5d. From this he argued that the grants might very well be increased.

The Chairman moved the adoption of the Report and Audited Accounts. The motion was seconded by Mr. C. H. Curtis, who said that all associated with the Fund would be glad to learn that the Committee had been able to replace the investments realised during the war, and had been able to increase the income from dividends. He regretted the meagre attendances due, perhaps, to the happy state of the finances which enabled the Committee to recommend the placing of all applicants on the Fund without a competitive election. He had previously, urged an increase of benefits, and after Mr. Barr's statement, he felt there was no longer any need to withhold an increase on financial grounds. The motion was carried.

Mr. Barr then proposed that the weekly grants to Orphans should be raised to 7s. 6d., and that the Committee be empowered to take such steps as are necessary to give effect to the proposal (a General Meeting will be necessary as a rule is affected). Mr. C. H. Curtis seconded the proposal, which received unanimous assent.

Mr. George Monro moved a vote of thanks to Mr. Gerald W. E. Loder, and congratulations on his election to the Presidency of the Royal Horticultural Society. This was carried, as was the proposal of Mr. Giles, that Mr. Edward Sherwood be re-elected Treasurer. The proposals of Mr. Wort and Mr. Leach, regarding the re-election of retiring members of Committee and the election of the two new members recommended in the Report, also received assent, while Mr. A. C. Bartlett's re-appointment as Secretary, gave Mr. Ingamells and Mr. Monro the opportunity to say kind things about his work, and these kindly remarks were heartily endorsed by all present. No less hearty were the thanks accorded the Chairman, who presides so genially and works so tremendously hard on behalf of the Royal Gardeners' Orphan Fund, which has its headquarters at 19, Bedford Chambers, Covent. Garden, London, W.C.2.

SALISBURY GARDENERS'.

ON February 6, in connection with the Salisbury Gardeners' Society, an important lecture was delivered by Mr. W. H. Turner, B.Sc., Technical Advisor to Messrs. George Monro, Ltd., on the particular values of certain fertilisers, and the sterilising of soil. The lecture room at the White Hart Hotel was well filled, many friends from Andover and other districts being present.

The lecturer mentioned that the practice of fertilising the soil was nearly as old as cultivation. About the year 1800, important scientific discoveries took place, and it was found that plants needed carbon, sulphur, phosphates, potash and nitrogen to sustain growth. Nitrogen was a most important plant food for the Cabbage family, while phosphates were particularly useful in the cultivation of root crops, and the potash for fruits. As regards organic manures, he was of the opinion that farmyard manure was far and away the best, particularly on heavy soils.

Proceeding, the lecturer gave some very interesting results from various trials that he had carried out, proving beyond doubt the wonderful strides that had been made through scientific research during the last century. With regard to partial soil sterilisation by the modern steam process, the lecturer stated that the soil contained good and bad bacteria, and partial-sterilisation killed, to a very great extent, injurious bacteria, and so naturally purified the soil. It was the only sure method of killing fungus and other diseases. Very useful information was imparted, which, if acted upon, would certainly improve the quantity and quality of crops.

Mr. W. F. Gullick, in proposing a vote of thanks to the lecturer, stated that this particular lecture was the two-hundred-and-fortieth delivered before the Society, and he did not remember a lecture of so technical a nature being delivered with such simplicity. They were not only indebted to the lecturer, but also to Messrs. George Monro, Ltd., for having made the lecture possible.

A remarkable collection of Potatos was exhibited by Mr. W. F. Gullick. The Chairman stated that the Potatos were grown in Fifeshire, having already been exhibited on three different occasions, and had been awarded Gold Medal. On behalf of the Society, he thanked Mr. Gullick for the trouble he had taken in procuring and staging such a comprehensive and useful collection, which gave them the right idea of the size, shape and standard of the various kinds worth growing.

PARKS AND BOTANIC GARDENS SUPERINTENDENTS.

The quarterly meeting of the North-western Branch of the Parks and Botanic Gardens Superintendents' Association was held in the Town Hall, Manchester, on Saturday, January 26, when there was a good attendance of members.

It was decided that the Branch Committee undertake the local arrangements to be made in connection with the Annual Conference of the Association, which will be held at Manchester in July next. It was also agreed that the annual meeting of the Branch be held in the Town Hall, Manchester, on Saturday, April 27.

Following the meeting, Mr. M. Morgan, Superintendent of Parks, Crewe, gave an address on "Some Experiences of a Parks Superintendent." Mr. W. W. Pettigrew, President of the Association, occupied the chair. In his address, Mr. Morgan emphasised the desirability of encouraging in the younger generation a love of nature and respect for public property. A vote of thanks was unanimously accorded to Mr. Morgan for his interesting lecture.

KINGSTON AND SURBITON CHRYSANTHEMUM.

The Annual General Meeting of this Society was held on Wednesday, January 30. In the absence of the President, Mr. H. C. Gardner was voted to the chair. The Report and Balance Sheet for 1928 were read and considered very satisfactory; a balance of £18 11s. 10d. was carried forward. The President, F. G. Wigley, Esq., was again elected, as was the Secretary, Mr. W. H. Divers; a few new members were added to the Committee, and Mr. H. Thomas was elected Assistant Secretary. A series of lectures has been held in Kingston in order to spread a better knowledge of horticulture in the district; these have been the means of adding many members to the Society, and they are being continued.

ELGIN HORTICULTURAL.

The Annual Meeting of this Society was held in Elgin, Lord Provost Wittet, the Honorary President, taking the chair. Mr. Mann, Secretary, submitted the Annual Report and Balance Sheet, which showed that last year's two-days' show was eminently successful, and that the surplus balance in hand for the year was £79 9s. 1d. The Chairman, in moving the adoption of the report and accounts, paid a high tribute to the organisers of last year's show, and stated that, although the Society was not out to make money, but rather to advance the science of horticulture in and around Morayshire, it was very satisfactory to have a nest egg. The Report and Statement of Accounts were unanimously approved.

Officers were then appointed, Lord Provost Wittet again accepting the post of Honorary President, although he had been strongly advised to give up his public appointments. Mr. George Milne, Newmill, Elgin, was elected President; Mr. John Coutts, Rosefield, and Mr. L. C. O. Smith, Vice-Presidents; and Mr. T. L. Mann was enthusiastically re-elected Hon. Secretary. Warm tribute was paid to Mr. Mann's fine work on behalf of the Society, and it was unanimously agreed to increase his honorarium by £10. The Council of both amateur and professional gardeners was also re-elected, and it was agreed that the annual show this year be held on Wednesday and Thursday, August 21 and 22. The question of a one-day or two-day show was mooted, but as the second day of the show last year more than paid for itself, it was resolved to continue the two-day arrangement. The proposal that the Society should purchase outright the material for the staging at their shows, and not have to pay a yearly fee for hiring it, was adopted.

LONDON AND SOUTH OF ENGLAND VIOLA AND PANSY.

At the Annual General Meeting of the above Society, held recently, the Report showed a satisfactory year's working. Mr. Eric Holroyd was re-elected President, and Mr. John H. Little, Brent Tor, Brentwood Road, Romford, Hon. Secretary and Treasurer.

The third Annual Show will be held at the Royal Horticultural Society's New Hall, Westminster, on July 16, 1929, when classes will be again provided for Violas (exhibition and bedding varieties), Violettas, Viola species and Pansies.

The Society will offer, for the first time, Certificates for new varieties of Violas and Pansies. The Secretary will be pleased to furnish any interested persons with particulars of the Society.

CROYDON HORTICULTURAL.

There was a large attendance of members at the recent meeting of this Society at the Y.M.C.A. Hall, North End, Croydon, when Mr. H. S. Jolly, of Kenley, gave an interesting lecture on "A Few Plants and their Natural Habitats.''

He dealt with a number of the native plants of Madeira—Gardenias, Camellias and Bouvardias—and then reviewed the flora of the Cape Peninsula. Numerous plants from India were described, and the lecture was concluded with a brief survey of Holland and its horticultural activities.

Obituary.

Georges Couderc.—The French agricultural journals have just announced the death, at an advanced age, of Georges Couderc, the celebrated Grape hybridist, to whom French viticulture is indebted, in large measure, for its prosperity. From the time of the first invasion of Phylloxera, which menaced with ruin all the French vines attacked by this terrible scourge, Couderc realised—being one of the first to do so—all that might be accomplished for the restoration of the ravaged vineyards, either by crossing American species with French varieties so as to combine the quality of the latter with the resistance of the former to the attacks of the insect, or in crossing together the various American types in order to obtain stocks adapted to different soils and climates. Couderc was a scientific man, and his work was conducted methodically. Literally thousands of crosses were effected on his beautiful estate of Aubenas (Ardèche), at the foot of the Cevennes Mountains, in the south of France. Extremely important results were obtained as a consequence of this work, and the Couderc hybrids, most of them designated simply by a number, now bulk largely in the restored French vineyards, either in the form of stocks, or as "direct producers," *i.e.*, vines which are capable of producing Grapes from which wine of quality can be made. Couderc's activities did not, however, cease with his work on the Vine; he was intensely interested in the cultivation of exotic fruit trees, and had formed a large collection. He was greatly interested in the improvement of the Orange and other Citrus trees, and had endeavoured to collect, at Aubenas, the largest possible number of types. The problem he had set himself was to obtain Oranges resistant to cold, and capable of flourishing in the open air to the same limits of climate as the Olive (see *La Revue de Botanique Appliquée et D'Agriculture Coloniale*, Paris, November, 1922). He had observed, in the hardiest members of the Japanese group of Oranges, viz., Satsuma, Unshu, etc.,—according to him, apparently hybrids of Citrus japonica and C. Aurantium—very considerable individual differences, and had been successful, by selecting resistant specimens and grafting them on the hardy Citrus triptera, in obtaining trees which were able to withstand a temperature of 14°C. below zero. He subsequently produced a number of hybrids of Satsuma, Unshu, etc., by crossing them with well-known varieties of Orange, such as Jaffa and Washington Navel. He was also interested in Pineapples, and had, in his hothouses, various seedlings of the Smooth-leaved Cayenne. Finally, towards the close of his life, the Chestnut scourge known as "ink disease," which does a great deal of damage in the south of France, occupied his attention, and he had begun a series of crosses with Japanese types considered to be resistant to infection. *A. M.*

Joseph Hoskins.—We regret to announce the death of Mr. Joseph Hoskins, at the age of seventy-five years, a landscape gardener with Messrs. Neal and Messrs. Wallace for nineteen years.

Gilbert R. Hunter.—Friends and past students of the Midland Agricultural and Dairy College, Sutton Bonington, will regret to learn that Mr. Gilbert R. Hunter, B.Sc., died, after a brief illness, at Sutton Bonington, on Sunday, February 17. He was appointed lecturer in engineering and surveying in 1923, after graduating at Edinburgh, and from the outset showed great initiative and determination. This, combined with his enthusiasm, ensured the success and development of his section of the work at the College. The late Mr. Hunter also showed a keen interest in student activities, and took a leading part in the development of the College Dramatic Society. His death will be a great loss to the College and his place difficult to fill.

Seth L. Mosley.—The death of Mr. Seth Lister Mosley, of Wasp Nest Road, Huddersfield, has removed one of the best-known residents of the borough, and a naturalist of widespread reputation. A frail man, whose life was more than once despaired of, he reached the age of eighty years—in itself a tribute to the frugal and simple mode of life which he imposed upon himself. The son of a hand-loom weaver, who afterwards became a game-keeper, Mr. S. L. Mosley was born at Lepton. His health was so poor that his total period of school life was only six months. His father became interested in taxidermy, and used to walk from Lepton to Doncaster to take lessons in the art. Mr. Mosley ascribed his love of nature and nature study to the influence of his father. Early in life he began the study of entomology, and the knowledge he acquired was so great that he was eventually selected to remodel the collection belonging to the Board of Agriculture at the Bethnal Green Museum. So well did he perform this work that he was selected to undertake a similar duty for many of the principal museums of the country, and for the museums of Melbourne and Philadelphia. Forty years ago, Mr. Mosley was appointed a botanical teacher under the Science and Art Department, and for seven years he taught voluntarily and without payment at local schools. About thirty year ago, he was appointed Curator of the Technical College Museum, and held that position for about twenty years. During his retirement he worked on an illustrated natural history of the Huddersfield district, a work which remains unfinished. For a long period he was secretary of the Huddersfield Naturalists' Society, and was a Fellow of the Entomological Society of London. He founded the Christian Nature Study Mission in 1900, and produced numbers of coloured drawings of butterflies which are considered unique. *Natural History*, which Mr. Mosley purchased in 1894, became, under his editorship, the most widely circulated organ of the kind in this country.

Mathias Ramstetter.—We regret to learn from the German horticultural press of the death of Mathias Ramstetter, a famous nurseryman of Hanover, at the age of sixty-one years. Herr Ramstetter settled in Hanover in the early nineties, where he established his business, and took from the first a prominent part of the local horticultural affairs, in which he showed himself a born organiser. Many an exhibition owed much of its success to his untiring energy and skill, and to the genial spirit which united all the sections in the horticultural trade. At the recent great Chrysanthemum exhibition in Hanover, although his strength was already failing, he made a noteworthy speech which will remain long in the minds of his hearers. His death will be a very great loss to horticulture in Hanover, and, indeed, in all Germany. The wealth of floral tributes which graced his funeral, and the concourse of friends who attended to pay their last tribute to his memory, afforded ample witness of the esteem and affection in which he was held.

W. E. Trevithick—We regret to announce the death of Mr. W. E. Trevithick, from pneumonia, on February 10, at Headfort House Gardens, Kells, Co. Meath. Mr. Trevithick was born at Helston, Cornwall, in 1858. He began his career in the gardens at Trevarno, Helston, and then went to Oleley Park, Shropshire; after some years there, he went, in 1883, to Putteridge Park, Luton. He spent two years as foreman at Wentworth Woodhouse, and four years as general foreman to Lord Wimborne, at Canford Manor, Wimborne. Mr. Trevithick was head gardener to the Marquis of Exeter at Burghley, and passed on to Gaunt's House, Wimborne, where he spent ten years as gardener to Colonel Richard Glyn. In 1912, he was appointed gardener to the Marquis of Headfort. With such wide experience as Mr. Trevithick had gained in these first-rate gardens, combined with a keen love of his work, it can be easily understood that he was a master of his craft, an expert grower of stove and greenhouse plants, and very clever at forcing flowers, fruits and vegetables. He was also an excellent botanist. Mr. Trevithick proved his adaptability early in his career at Headfort, by planting and caring for the new arboretum, a feature to which the Marquis of Headfort has devoted much energy and care. When Wilson, Farrer, Forrest and Kingdon Ward sent home seeds of their collecting, further tests of Mr. Trevithick's skill were made. Quantities of these seeds, especially Rhododendrons, reached Headfort. All of these were listed, raised, pricked-off, and finally transferred to frames by Mr. Trevithick himself. The making and stocking of the nursery from these frames was also his especial work. Many Rhododendron growers from England and Scotland have seen the results of his treatment and can testify to the excellence of the plants. The nursery plants, when big enough, were transferred to the grounds, where special preparations had to be made for them. Mr. Trevithick was a very clever propagator, succeeding with such difficult plants as Willdenowia teres, various species of Nothofagus, Eucryphia Moorei and E. Billardieri. During his service at Headfort, Mr. Trevithick staged many interesting groups of Rhododendrons, also other plants, at exhibitions of the Royal Horticultural Society of Ireland, which secured Gold Medals and many other awards. He gained the regard and confidence of Lord Headfort. The gardens and grounds of Headfort House are a memorial of good work in which the co-operation and planning of employer and gardener is evident. Mr. Trevithick's remains were followed to the churchyard in Kells by a large gathering. Lord Headfort placed a beautiful wreath on the coffin, which bore a sympathetically worded inscription to his friend. Members of his own family, the estate agent, Sir Frederick Moore, the indoor staff, the garden staff, estate workers and others, were present. There were many floral tributes. Mr. Trevithick leaves a widow who is an invalid, two sons and two daughters, for whom much sympathy is felt.

ANSWERS TO CORRESPONDENTS.

AMARYLLIS (HIPPEASTRUM) UNHEALTHY.—*M. L. F.* The leaves you sent us were badly infested with thrips and red spider, probably owing to the atmosphere in which they are growing having been kept too dry. Sponge all the leaves vigorously with a nicotine and soft-soap solution, maintain a less arid atmosphere, and turn the plants on their sides occasionally and syringe the undersides of the foliage with the above insecticide. Occasional syringings with clear water will also assist in keeping these pests in check.

ASPARAGUS PLUMOSUS DISCOLOURED.—*E. G. C.*—The plant of Asparagus plumosus is free from disease, and the dying-back of the foliage is due to unhealthy root action. The tips of many of the roots are dead, and it appears as if they have come into contact with something distasteful to them. Some alteration should be made in the compost. Make a thorough inspection of the soil to see whether there are any lumps of lime, or masses of decaying organic matter which will set up an acid medium, or ashes, which may be in contact with the roots.

CULTURE OF DIELYTRA SPECTABILIS.—*L. L.* Dielytra spectabilis is one of the easiest of subjects to force; if clumps are lifted from the open ground, potted in a moderately light, loamy compost, and placed in a glasshouse with a moderate temperature, they should soon start into growth and make useful decorative plants. In the open garden they should be grown in a cool, lightly shaded position for preference, in warm, light but rich soil. It is not difficult to establish, and when once planted may be left undisturbed for many years.

DISCOLOURED WATER IN A LILY POND.—*S. P.* If the water in the pond, and the water taken from a well beneath it, was pinkish-lilac, one could presume that it had been contaminated from the new red sandstone beneath it which is often variegated by different chemical combinations of iron; but this would not be very visible unless the well has tapped a bed of water that has stagnated for a long period, giving the iron ore time to accumulate in the water. There are chalybeate springs in the country containing various combinations of iron, but they are not highly coloured unless stagnant. You also state the water is milky, which would suggest chalk, but there is none in your district, although some might be dissolved from the concrete. It is more likely that the discoloration of the water is due to a variety of impurities in it, such as minute vegetation, animalcules, or dead organic matter. Neither dissolved chalk, limestone nor iron compounds of the more common kinds, nor dead organic matter, would be injurious to the Water Lilies. The water could be changed late in March, and the pond scrubbed out and washed, as is usually done by having a pipe in the bottom by which the water could be run away in a drain. This gets rid of the decaying vegetable matter at a time when the Lilies are resting. Large bodies of cold water are unfavourable to the Lilies when they are growing.

GARDENER'S NOTICE TO LEAVE.—*Civis.* It is always open to the employer to determine the head gardener's employment on giving him the proper notice, and it would therefore be within the power of the employer to do this if the head gardener's wife gave the employer notice determining her service as housekeeper. It does not, however, necessarily follow that the employer would take this step if properly approached.

GROWING EGG PLANTS (AUBERGINES).—*C.* Aubergines are not difficult plants to grow, provided they are kept free from insect pests. Perhaps the two most troublesome of these are red spider and white fly. The seeds should be sown in a good open compost early in March, for preference in a six-inch receptacle. When the seedlings are about three inches in height they should be potted singly into small pots, and, when they have filled these, should be transferred to six-inch pots, finally planting them in those of eight-inch size. Good results may also be obtained if they are planted out in a bed of soil. Good open loam, with some short manure or leaf mould, a little bone-meal and sharp sand added, should form a suitable compost. The size of the fruits will be improved greatly if some stimulating fertilisers are afforded the plants when several fruits have set on each. New York Purple and Long White are both good varieties to grow.

LONICERA SYRINGANTHA FAILING TO FLOWER.—*W. F. W.* The position in which your plant is growing should suit this bush Honeysuckle if the soil contains sufficient nutriment for it to make good growth. Give a mulch of well-decayed manure in May, or immediately after flowering in June, to encourage the production of new shoots on which the following year's blooms will be produced. The lilac-coloured blossoms are not always produced freely. It may be that the plants raised from seeds vary in this characteristic and, if one has a free-flowering bush, increase by cuttings or layering would be worth while.

NAMES OF PLANTS.—*S. P. S.* Acacia longifolia.—*G.* 1, Libertia paniculata; 2, Libertia formosa; 3 and 5, Helleborus colchicus varieties; 4, Helleborus niger.

NAMES OF FRUITS.—*H. J. H.* Apple Newton Wonder.—*J. P. C.* The specimen you sent was entirely out of character; send a characteristic fruit next season.

ORANGE LEAVES FALLING.—*W. W. N.* The fallen Orange leaves sent were insufficient material from which to make a diagnosis of the trouble. A small branch from which foliage is being shed should be sent. There was no sign of disease on the petiole; the scale nymphs and some red spider present should have no effect on leaf-fall. The severe pruning experienced by the plant would exercise a physiological effect, as the balance between root and stem would have been temporarily upset. The trouble may be due to poor drainage or the roots coming into contact with some material distasteful to them.

PLANT FROM AUSTRALIAN SEEDS.—*M. C.* Your plant appears to be Syncarpia laurifolia, an Australian plant belonging to the Natural Order Myrtaceae. This becomes a large tree, and has been planted extensively in India and California. We cannot, however, be certain of the identity of your plant, as a young seedling differs somewhat from the adult plant. It will not grow out-of-doors in this country, as it requires a greenhouse temperature,—an average of 40° to 50°; given such conditions you should be able to grow it in a large pot or tub.

SODIUM CHLORATE AS A WEED-KILLER.—*E. C. V.* Potassium chlorate ($KClO_3$) is well-known, but we cannot find any reference to sodium chlorate ($NaClO_3$) as a weed-killer. Another chemical combination is potassium chloride ($5KCl$), and this is easily matched by sodium chloride ($NaCl$), which is common or table salt. This has long been known as a weed-killer, and was used before weed-killers made with sulphuric acid were employed. Possibly you were thinking of sodium chloride being used in England and France for killing weeds on paths, for it has been used for more than fifty years to our knowledge, although less often now than formerly. The plan is to scatter it over drives or paths until they look white, choosing dry weather for the operation, and leaving the salt to do its work. The salt disappears in the course of a week.

Communications Received.—W. B. T.—J. O.—G. F. W.—J. R.—C. H.—H. W.—D. F.—H. R. T.—W. W.—W. C.—G. H. D.—W. A.—J. W.—H. E. B.—H. E. S.

MARKETS.

COVENT GARDEN, Tuesday, February 19, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Adiantum cuneatum, per doz.	10 0	12 0
—elegans	10 0	12 0
Aralia Sieboldi	8 0	9 0
Araucarias, per doz.	30 0	40 0
Asparagus plumosus	12 0	18 0
—Sprengeri	12 0	18 0
Aspidistras, green	16 0	60 0
Aspleniums, doz.	12 0	18 0
—32's	24 0	30 0
—nidus	12 0	15 0
Azaleas, 32's, each	5 0	7 0
—per doz.	48 0	60 0
—60's, per doz.	15 0	18 0
Cacti, per tray, 12's, 15's	5 0	7 0
Cinerarias, per oz.	21 0	24 0
Crotons, per doz.	30 0	45 0
Cyclamens, per doz.	24 0	36 0
Cyrtomiums	10 0	12 0
Daffodils, per doz.	12 0	15 0

	s. d.	s. d.
Erica gracilis, per doz.	24 0	30 0
— — 60's, per doz.	12 0	15 0
— nivalis, per doz.	24 0	36 0
— — 60's, per doz.	12 0	15 0
Hyacinths (3 bulbs), per doz.	21 0	24 0
— 60's (1 bulb), per doz.	8 0	9 0
Marguerites, white, per doz.	18 0	21 0
Nephrolepsis in variety	12 0	18 0
—32's	24 0	36 0
Palms, Kentia	30 0	48 0
—60's	15 0	18 0
Pteris in variety	10 0	15 0
—large, 60's	5 0	6 0
—small	4 0	5 0
—72's, per tray of 15	2 0	3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	21 0	24 0
—cuneatum, per doz. bun.	15 0	16 0
Anemone, St. Brigid, per doz.	6 0	9 0
Arums (Richardias), per doz. blooms	9 0	10 0
Asparagus plumosus, per bun., long trails	2 6	3 0
—med. sprays	2 0	2 6
—short ,,	—	1 0
—Sprengeri, bun. long sprays	2 0	2 6
—med. ,,	1 0	1 6
—short ,,	0 6	1 0
Camellias, white, per doz. blooms	—	4 0
Carnations, per doz. blooms	3 6	5 0
Chrysanthemums—		
—white, per doz. bunches	60 0	72 0
—white, per doz. blooms	6 0	9 0
Croton leaves, per doz.	1 9	2 6
Daffodils, single, per doz. bun.	10 0	15 0
—King Alfred, per doz. bun.	18 0	24 0
—double, per doz. bun.	9 0	10 0
— Victoria, per doz. bun.	15 0	16 0
—Princeps, per doz. bun.	7 0	9 0
—Sir Watkin, per doz. bun.	10 0	15 0
Ferns, French, per doz. bun.	10 0	12 0
Forget-me-nots, per doz. bun.	12 0	15 0
Freesias, white, per doz. bun.	3 6	4 6
Heather, white, per doz. bun.	9 0	12 0
Iris tingitana, per doz. blms.	5 0	6 0
Lilac, white, per doz. sprays	6 0	10 0
—mauve, per doz. sprays	6 0	9 0
Lilium longiflorum, long, per bun.	11 0	12 0
— — short, per doz. blooms	11 0	12 0
— speciosum rubrum, long, per doz.	5 6	6 0
— — — short, per doz.	4 6	5 0
Lily-of-the-Valley, per doz. bun.	24 0	30 0
Myrtle, green, per doz. bun.	1 6	2 6

	s. d.	s. d.
Narcissus, Paper White, per doz. bun.	9 0	10 0
—Soliel d'Or, per doz. bun.	10 0	12 0
—Elvira, per doz. bun.	15 0	18 0
—Grand Primo	10 0	12 0
—poeticus, per doz. bun.	9 0	12 0
Orchids, per doz.		
—Cattleyas	18 0	30 0
—Cypripediums	9 0	18 0
Prunus triloba, per bunch	4 0	5 0
Roses, per doz. blooms—		
—Mme. Butterfly	12 0	15 0
Smilax, per doz. trails	4 6	5 0
Snowdrops, single, per doz. bun.	3 0	6 0
Tulips, per doz. bun—		
—white	24 0	30 0
—yellow	24 0	30 0
—red	18 0	27 0
—pink	24 0	36 0
—terra cotta	18 0	24 0
—mauve	24 0	30 0
—double varieties	24 0	36 0
—Darwin's, pink, per doz. bun.	36 0	42 0
— — red, per doz. bun.	36 0	42 0
Violets, Prince of Wales, per doz. bun.	4 0	6 0
French Flowers—		
—Aacia (Mimosa), per doz. bun.	12 0	15 0
—Anemones, De Caen, per doz. bun.	21 0	24 0
—Marguerites, yellow, per doz. bun.	6 0	8 0
—Marigolds, per pad	9 0	12 0
—Narcissus—Paper White, per doz. bun.	6 0	7 0
—Soleil d'Or, per doz. bun.	5 0	6 0
—Ranunculus—double scarlet, per doz. bun.	10 0	12 0
— — carmine, per doz. bun.	10 0	12 0
—Roses, Safrano, per pkt. 24's	3 6	4 0
— — Ulrich Brunner, per doz. blooms	5 0	7 0
—Violets, Parma, per large bun.	8 0	10 0

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Cox's Orange Pippin, doz.	3 0	5 0
—Bramley's Seedling	8 0	16 0
—American Newtown		14 0
—Albemarle Pippin, per barrel	30 0	35 0
—Nova Scotian—		
—Ben Davis	21 0	24 0
—Starks	22 0	25 0
—Golden Russet	22 0	34 0
—Baldwin	22 0	26 0
Bananas, per bun.	18 0	25 0
Dates, dry, in cartons	4 6	5 6
Grapes—		
—Gros Colmar	3 0	4 6
—Belgian Colmar	2 0	2 3
—Cape—		
—Black Prince, per box	7 0	8 0
—Hermitage		
—Waltham	—	15 0
—Rosetti	15 0	20 0
—Molinera	—	12 0
Grape Fruits—		
—Jamaica	18 0	20 0
—Florida	22 6	25 0
—Honduras	19 0	20 0

	s. d.	s. d.
Lemons, per case—		
—Messina	11 0	27 6
Nectarines, Cape, per tray	5 0	8 0
Nuts—		
—Cases	14 0	25 0
—Boxes	10 6	14 0
Oranges—		
—Palermo Bitter	9 0	10 0
—Seville, per case	20 0	26 0
—Almeria, case	24 0	40 0
—Jaffa	16 0	18 0
—Denia	14 0	20 0
Peaches, South African, tray	4 0	8 0
Pears, Cape,		
—Clapp's Favourite	4 0	5 0
—Bon Cretien	4 0	5 6
—Californian—Winter Nelis, ½-tray	13 0	14 0
Pineapples, case	20 0	35 0
Plums, South African—		
—Santa Rosa	3 6	6 0
—Wickson	3 6	6 0
—Chalcots	6 0	8 0
—Apple Plum	6 0	12 0
—Satsuma	4 0	5 0

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Asparagus, English	12 0	14 0
—French—		
—Paris Green	—	16 0
—Lauris	10 0	16 0
—Giant	30 0	40 0
—Sprue	2 0	2 6
Beans—		
—Worthing, finest, per lb.	7 0	8 0
—Madeira	4 0	6 0
Beet. per bag	5 0	6 0
Brussels Sprouts, ½-bag	—	4 0
Cabbage, per doz.	1 0	2 0
Carrots, ½-bag	2 3	2 6
Cauliflowers, Cornish, crates, 18's, 24's	10 0	12 0
—French, St. Malo	4 0	6 0
Celery, washed, per doz.	18 0	30 0
Chicory, Belgian	—	0 6
Cucumbers, doz.	12 0	30 0
Endive, French, per crate, 18's and 24's	5 6	6 0

	s. d.	s. d.
Lettuce, Cabbage—		
—French, indoor, 48's, 60's	6 0	8 0
—outdoor, 24's	5 0	7 0
Mint, per doz. bun.	6 0	8 0
Mushrooms—		
—cups, per lb.	2 0	3 0
Onions, Spanish	14 0	17 0
Parsnips, cwt.	6 0	7 0
Peas, hothouse, per lb.	3 0	6 0
Potatos—		
—English, cwt.	4 0	7 0
—Azores, new per case	8 0	16 0
—new hot-house, per lb.	0 7	0 8
—Canary Island	10 0	12 0
Rhubarb, forced, per doz.	1 9	2 0
Savoys, per doz.	2 0	2 6
Seakale, boxes, 8 lb.	5 0	7 0
Tomatos, Canary Island, per bundle	10 0	14 0

Remarks.—Business suffered greatly through severe weather. All vegetables arrived in a frozen condition, in some cases despite special packing to counteract the conditions.

GLASGOW.

There was a marked decline in the volume of business transacted in the cut flower market last week in consequence of the severe climatic conditions and the poor condition of blooms from the south of England which, after their very long railway journey, arrived in a more or less frozen state. Locally grown material, having the advantage of quick transit, did not depreciate to any extent, and therefore obtained steady prices, but the general trend of values of Tulips and Daffodils was towards lower levels. Of the former, Bartigon was worth from 1s. 2d. to 1s. 6d. for 6's; Le Notre, 1s to 1s. 4d.; William Pitt, 10d. to 1s. 4d. Couronne d'Or, Tea Rose, Flamingo and Prosperity, 9d. to 1s. 2d.; William Copland, 8d. to 1s. 2d.; Brilliant and White Hawk, 8d. to 1s.; Murillo, Prince of Austria and Thomas Moore, 6d. to 1s. Daffodils were offered in greater variety, King Alfred realising 2s. per dozen; Victoria, and Sir Watkin, 1s. 8d.; and Golden Spur, 10d. to 1s. 2d.; Narcissi sold at 2s. to 3s. per dozen bunches. Carnation prices anged from 3s. to 6s. per doz. Arum and Lilium Harrisii, 10s. to 12s.; Lily-of-the-Valley, 1s. 9d. to 2s. 6d. p bunch; Lilac, 2s. to 3s.; Prunus, 2s.; Mimosa, 11s. per pad; English Violets, 2s. to 3s.; and Smilax, 1s. 6d.

The fruit market was particularly quiet, Apples being a little cheaper. Winter Nelis Pears realised from 13s. 6d. to 17s. per case for Washington brands, and 17s. per half-case for Californian. Valencia Oranges, 200's and 240's, sold at 17s. to 24s.; 300's, 17s. 6d. to 28s.; 360's and 504's, 15s. to 20s.; large, 714's, 24s. to 30s.; and large, 420's, 28s. to 33s. Palermo Lemons made 15s. to 17s. per case; and Murcia Lemons, 14s. 6d. to 16s. 6d. half-cases. Grape Fruits sold at 15s. to 22s., according to counts; home-grown Grapes at 3s. 6d. to 4s. 6d. per lb.; Cape Nectarines and Peaches, 5s. to 8s. per box; and Plums, 5s. to 6s.

In the vegetable section, Cucumbers advanced in price to 30s. per dozen; Lettuces sold at 3s. to 4s.; Cauliflowers, 2s. 6d. to 3s. 6d.; Mushrooms, 2s. per lb.; and Rhubarb, 30s. to 35s. per cwt.

TRADE NOTES.

Originality is one of the keynotes of successful advertising, and we congratulate Mr. R. F. Calvert, the well-known Narcissus specialist, of Carnsulan Nurseries, Coverack, Cornwall, on the attractive series of calendars, tastefully decorated with coloured illustrations of some of his Narcissus novelties, which he has issued in conjunction with his instructive and comprehensive catalogue.

Patents and Trade Marks.—Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle.*

WEATHER IN JANUARY.

This was the calmest January, and one with the least westerly winds, in the fifty-eight years' history of the Southport Observatory. S.W. winds also were nearly absent. Barometric pressure was very high and remarkably steady. Except during the last few days, the weather was almost continuously cold, but with little precipitation. Much colder January months are, however, on record. The mean temperature was 35·9°, or 3·2° below the average. Rain fell on 14 days—the normal number; but the total was only ·40 inch, which was 1·28 inch less than the average. An aggregate of 39 hours of bright sunshine was recorded, or merely four hours short of the normal. Frost on the grass occurred almost nightly; on 19 dates there was frost in the shade. Snow was only seen three times, and the total depth (unmelted) did not exceed 1½ inch. Thick fog was also restricted to portions of three days. Slight hail fell on the 17th. There were no gales. *Joseph Baxendell, The Fernley Observatory, Southport.*

CATALOGUES RECEIVED.

Maxwell and Beale, Broadstone, Dorset.—Hardy Primulas.
Patrick's, Sevenoaks, Kent.—Roses, Fruit Trees, Shrubs, Climbing and Herbaceous Plants, etc.
C. Engelmann, Ltd., Saffron Walden.—Carnations.
Clibrans, Ltd., Altrincham.—Sale Catalogue—Trees, Shrubs, Pot Plants, etc.
Chase, Chertsey, Surrey.—Chase Continuous Cloche.
Waterer, Sons and Crisp, Ltd., Twyford.—Clearance Sale of Herbaceous and Alpine Plants.

Foreign.

Yokohama Nursery Co., Ltd., Japan.—Tree and Shrub Seeds, Japanese Flower and Vegetable Seeds, Shrubs, Herbaceous Plants and Sundries of Japanese origin.
Henderson and Co., New York.—Flower and Vegetable Seeds, Roses and Hardy Perennials.
Treppens and Co., Berlin.—Flower and Vegetable Seeds Pot Plants and Garden Sundries.
Hill Floral Products Co., Indiana.—Roses, Carnations and Chrysanthemums.
Paul Zacharias, Ermsleben.—Wholesale Seed List.
Chas. F. Barber, Oregon.—Hoodacre's Delphiniums.

GARDENING APPOINTMENTS.

Mr. Robert Scrimgeour, for the past fifteen months Gardener to Col. P. Lester Reid, Thorpe-Mandeville Manor, Banbury, Oxon., and formerly for two years Foreman to Lord Hamilton of Dalzell, Dalzell House, Motherwell, as Gardener to General Stirling, Keir House, Dunblane. Mr. Scrimgeour commences his new duties on February 25. (Thanks for 2/6 for R.G.O.F. Box.—Eds.).

Mr. Ed. O. V. Griffiths, for the past two-and-a-quarter years Foreman in the glass department at Berwick House Gardens, Shrewsbury, Salop, as Gardener to Mrs. C. Gurney, Yew Tree House, Royston, Hertfordshire.

Mr. H. Thomas, for the past three-and-a-half years General Foreman to H. C. W. Foster, Esq., Hornby Castle, Hornby, Lancaster, as Gardener to F. A. Haworth, Esq., Birtles Hall, Chelford, Cheshire. (Thanks for 2/- for R.G.O.F. Box.—Eds.).

SOHEDULE REOEIVED.

The Rhododendron Association.—Exhibition to be held at the New Hall of the Royal Horticultural Society, Westminster, S.W.1, on Tuesday and Wednesday, April 30 and May 1, 1929. Acting Secretary, Mr. Gurney Wilson, R.H.S. Hall, Vincent Square, S.W.1.

THE
Gardeners' Chronicle
No. 2201.—SATURDAY, MARCH 2, 1929.

CONTENTS.

Alpine garden—
  Pentstemon heterophyllus 158
  Ranunculus gramineus 158
  Sedum Lydium ... 158
  Tanakaea radicans 158
Alpine Plants, Sewell Medal for 153
Book, notice of—
  Irises 160
British plants, notes on some 164
Flower garden—
  Convolvulus althaeoides and C. tenuissimus 158
Fruit-growing, importance of national 165
Gordonia alatamaha... 159
Gwydir Castle ... 155
Lemons, World's supply of 155
Loder, Mr. Gerald W. E. 154
Manures, Garden, for March 168
New Zealand plant hunter, notes from a 161
Nursery notes—
  Bicentenary of Messrs. Dicksons & Co., of Edinburgh ... 165
Obituary—
  Frisby, John ... 171
  Segar, S. 171
Onions, cold storage of 154
Plants new or noteworthy—
  Clusia grandiflora ... 158
Potatos, manuring of 153
Primula, the genus ... 165
Rose breeding ... 160
Royal Horticultural Society 153
Safflower, the... ... 164
Shrubs, late-summer and autumn-flowering 160
Societies—
  Glasgow and West of Scotland Horticultural 171
  Lanarkshire Fruit Growers' 171
  Moray and Nairn Foresters' ... 171
  Reading Gardeners' 171
  Royal Horticultural 168
  United Horticultural Benefit and Provident 171
Trees and shrubs—
  Genista aetnensis ... 159
  Lonicera hedges ... 159
  Salix lanata var. Stuartii 159
Vegetable garden—
  Brussels Sprouts, culture of ... 166
  Celery 167
  Rhubarb 167
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 162
Week's work, the ... 156
Wisley, notes from ... 163

ILLUSTRATIONS.

Clusia grandiflora... 155
Dicksonia squarrosa in New Zealand forest 157
Gordonia alatamaha 159
Loder, Mr. Gerald W. E.... 154
Raoulia Buchanani 161
Rhubarb under a greenhouse stage 167
Vegetables, Hon. Vicary Gibbs' exhibit at Chelsea Show, 1928 169
Ward's, Mr. F. Kingdon, tenth expedition in Asia 162, 163

Coloured Supplement Plate.
Odontioda Lambeauiana, Westonbirt var.

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 40·9°.

Actual Temperature—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, February 27, 10 a.m. Bar. 30·2. Temp. 30°. Weather, Fine.

Royal Horticultural Society.

The Report of the Council for 1928, presented to the one-hundred-and-fifth annual meeting of Fellows, on Tuesday last, provides a large amount of interesting reading. At the outset, the Council refers with profound regret to the loss sustained by the death of its President, Lord Lambourne, and to the passing of Sir William Thiselton-Dyer, Mr. Frank Reader, and others to whom the Fellows owe a debt of gratitude. The new Charter and By-laws were granted under Royal Warrant on June 9, last, and these give the Council somewhat wider powers than formerly. The numerical progress of the Society is remarkable, inasmuch as although there were no fewer than 1,557 losses by deaths and resignations, there was a net increase of 1,097 Fellows during the year; the total number of Fellows on November 13, last, was 26,356; this is a record of which any Society might well be proud. Moreover, six hundred kindred and local societies are affiliated to the R.H.S. The Report deals briefly with the various exhibitions, conferences and competitions held during the year, the deputations to Ghent and Harrogate, and the award of various medals. Then come references to the work in the Society's gardens at Wisley, and, although we have no desire to stress the point unduly, the Report certainly does not indicate a particularly handsome return for the £12,017 15s. 0d. which Wisley cost during the year. True, the various Trials conducted were of value to the Fellows and to seedsmen, and the gardens themselves are full of interest to those able to visit them. We are glad, however, to learn that—as already stated in these columns—the new disease of Meconopsis is being investigated, that research work in regard to the hot-water treatment of bulbs—so admirably begun by our late colleague, Mr. J. Ramsbottom—is being continued, and that experimental work is being carried out in connection with the effect of manures upon diseases of Roses and Gladioli, and the effect of light upon the growth and reproduction of plants. A report is promised concerning the effect of ultra-violet rays upon plant growth, but interest in the report is somewhat damped by the observation that "the general results show little in favour of the use of ultra-violet ray glasses for crop growing." The standard collection of hardy fruits is, we are told, being continuously added to, but what will probably please the general body of Fellows most is the establishment at Wisley of standard collections of such popular hardy flowers as Aubrietias, Asters, Cistuses, Crocuses, Delphiniums, Helianthemums, bearded Irises, Phloxes, Paeonies, Roses, Veronicas and Violas, and less hardy subjects such as Gladioli, Dahlias, Nerines, Freesias, Fuchsias and Lachenalias. If the collections are kept up to date and well cultivated, they should prove invaluable alike to trade and private growers. Passing on from Wisley, the Report draws attention to the principal additions made to the Lindley Library by purchase; by gift and purchase, 360 books and pamphlets have been added to this fine library during the past year. The Report concludes with thanks to the press, committees, judges and donors of seeds and plants, and draws attention to the International Horticultural Congress which is to take place in London in 1930. The finances of the Society are set out in no fewer than eighteen pages of the *Report and Book of Arrangements*. Those well versed in the art of accountancy will no doubt revel in the multiplicity of figures presented, but the ordinary Fellow finds such figures somewhat overwhelming, and looks in vain for an uninvolved statement that shows the financial position plainly and briefly. So far as we understand the position, the annual subscriptions come to £41,000 16s. 10d., and dividends and interest amounted to £2,900 1s. 9d., other items bringing the income to £53,774 13s. 3d. This left a profit of £22,686 12s. 3d., but of this sum £12,017 15s. 9d. was needed to balance the expenditure at Wisley, and £9,000 was placed to general reserve, leaving a balance of £848 13s. 6d. Certain investments have been realised—incurring a loss, on sale, of £2,087 5s. 4d.—and "partly used in the building of the New Hall," nevertheless, the balance sheet shows a General Reserve Fund asset of over £5,000 and an investment in Conversion Loan valued at £9,618 6s. 4d. It would appear, therefore, that the Fellows need have little fear for the financial position of the Society, notwithstanding its large commitments, and the prospective expenditure on increased Office and Library accommodation—an increase long overdue—and upon some other reconstructional work in the old hall.

Our Coloured Plate.—The original Odontioda Lambeauiana was raised by M. Peeters, nearly twenty years ago, by crossing Cochlioda Noezliana with Odontoglossum Lambeauianum. It arrested attention at once by reason of its brilliant colouring, the size and form of the flowers, and the graceful arrangement of the flowers on the spike. A similar cross has been made on several occasions since 1909, with the result that several varieties of Odontioda Lambeauiana have been raised and exhibited, notably O. L. Nellie, by Messrs. Black and Flory (Award of Merit, 1918); and O. L. Westonbirt variety, which was exhibited so well by Messrs. H. G. Alexander, Ltd., at the Chelsea Show in 1928, and is the subject of the Coloured Supplement Plate presented with this issue.

British Carnation Society's Secretaryship.—At a meeting of the Council, held on February 12, Mr. P. F. Bunyard, who has held the office of Honorary Secretary of this Society for a number of years, resigned, and Mr. F. W. Alesworth was elected to fill the vacancy. All correspondence relating to the Society should now be addressed to Mr. F. W. Alesworth, 17, Avenue Road, Isleworth, Middlesex.

Marking of Imported Tomatos.—The Public Enquiry into the application for an Order in Council under the Merchandise Marks Act, 1926, to require the marking of imported Tomatos in their fresh or raw state, will be held in Room 104, at 10, Whitehall Place, London, S.W.1, at 10.30 a.m., on Friday, March 22, 1929. Applications to be heard in evidence and any other communications with regard to the matter should be addressed, as early as possible, to the Secretary of the Standing Committee, Mr. H. J. Johns, 10, Whitehall Place, London; S.W.1.

The Sewell Medal for Alpine Plants..—Among the many enthusiastic cultivators of alpine plants in this country, none is more keen than Mr. A. J. Sewell, who has, in his beautiful garden at Ronneby, Oatlands Chase, Weybridge, a grand collection of alpine plants, embracing many rare subjects and the large majority of recently introduced novelties. In his unselfish desire to encourage the love of alpine plants among British gardeners, Mr. Sewell has provided the means whereby the Royal Horticultural Society is able to offer medals, struck in silver and silver-gilt, bearing Mr. Sewell's name, for exhibits of plants suitable for the rock garden or alpine house. In 1929, six medals are offered for award, two on March 26, two on May 7, and two on November 5. On each date one medal is offered for an amateur's exhibit, and one for a horticultural trader's exhibit of six pots or pans not exceeding twelve inches in diameter. The scale of points for judging these exhibits will be :—Suitability, 18 points; cultivation, 18 points; and rarity, 18 points. The competitions for these medals should prove extremely interesting, and, with alpine plants enjoying such widespread popularity as they are to-day, there should be no lack of exhibitors.

Manuring of Potatos.—The authorities of the Edinburgh and East of Scotland College of Agriculture have issued the results of experiments conducted at the Forfarshire farms of Oldbar, Lochty and Newton of Boysack, in connection with the manuring and varieties of Potatos. The average results at these three centres were as follows :—King Edward, 13 tons 6 cwts.; Arran Consul, 12 tons 9¾ cwts.; Great Scot, 12 tons 3 qrs.; Majestic, 9 tons 6 cwts. 2 qrs.; Ally, 8 tons 18 cwts. 1 qr.; and Golden Wonder, 8 tons 18 cwts. At Hillhead, Lawton and the Royal Asylum, Montrose, experiments were made with a view to ascertaining the limits of economic manuring. The mixture of manures are made up of 2 cwts. sulphate of ammonia, 2 cwts. superphosphate, 1 cwt. steamed bone-flour, and 2 cwts. sulphate of potash, distributed at the rate of 6, 8, 10 and 12 cwts. per acre. The average results at the three centres were :—Plot 1, 12 tons 9 cwts.; Plot 2, 13 tons 5¾ cwts. Plot 3, 13 tons 13 cwts.; Plot 4, 13 tons 19¼ cwts. The test here was to ascertain what crop increase could be obtained by successive applications of 2 cwts. of manure of value approximately 17s. The increase in Plot 2 over Plot 1 with Potatos valued at £3 per ton, shows a return of almost three times the extra outlay on manure. In Plot 3, the extra outlay is more than paid for, while in Plot 4, the value is still on the right side. This would seem to indicate that much larger dressings of suitable "artificials" might safely be given to Potato crops. It is proposed that further experiments on these lines should be conducted, starting with a heavier dressing and a more concentrated manure. Partly on the same lines an experiment was conducted at two centres with a view to ascertaining the effect of increasing the potash applied, and the results seem to show that an increased dressing of potash does not give satisfactory results unless the quantity of nitrogen is also increased. They show that no satisfactory increase has been secured by using more than 2 cwts. of sulphate of potash per acre, but in another experiment a satisfactory increase was obtained where the dressing of potash was equivalent to 3½ cwts. per acre.

Scottish Seed Potato Sales.—A number of auction sales took place last week in Scotland which indicate the market value of varieties of seed Potatos. At Hamilton the entries numbered 136 as against 96 last year, while the tonnage on offer also showed a considerable increase. Certain varieties, such as Arran Consul, were not in demand at any price, but of other sorts sales took place at the following quotations:—Sutton's Abundance, up to 95s.; Kerr's Pink, to 90s.; Arran Banner, to £12; Arran Chief and Arran Victory, to 65s.; Golden Wonder, to 85s.; Great Scot, to 90s.; Herald, to 80s.; and King Edward, to 107s. 6d. At Kilmarnock, the highest prices realised were:—Kerr's Pink, 80s.; and Golden Wonder, 100s.; while at a special sale Golden Wonder realised 160s., and Kerr's Pink, 75s. per ton.

Glasgow Flower Show.—The annual exhibition promoted by the Corporation of Glasgow and the Glasgow and West of Scotland Horticultural Society, is to be held in the Kelvin Hall on September 3, 4 and 5, a week later than in 1928. Owing to the liberality of the Corporation in increasing the prize money from £1,000 to £1,200, a more attractive schedule has been prepared by the addition of a honey and bee section.

Culinary Pea Competition at Westminster.—The Royal Horticultural Society is arranging a culinary Pea competition, to be held at Vincent Square, Westminster, S.W.1, on July 16. There will be no entrance fees. The classes are as follow:—(a) 6 distinct varieties of Peas, 1 dish of each; first prize £3; second, £2; third, £1.: (b) 3 distinct varieties of Peas, 1 dish of each; first prize, £1 10s.; second, 15s.; third, 10s. Any amateur may enter in either class, but not in both. Schedules and entry forms are obtainable from the Secretary, R.H.S., Vincent Square, London, S.W.1.

Brussels Linnean Society Banquet.—For many years past, it has been a tradition of the members of the Brussels Linnean Society to meet for an annual fraternal gathering, which takes the form of a banquet at which the various prizes won at the horticultural exhibitions are distributed. This distribution takes place on the third Sunday in February, and prize-winners, judges, and all the élite of the horticultural community makes its way to Brussels for the occasion. Unfortunately, this year, February was distinguished for its extreme cold, and influenza has taken a heavy toll of horticulturists in Belgium, so that there were many gaps in the ranks, and many telegrams and letters from members who were obliged to keep their beds. The banquet is also made the occasion for congratulating those who have been decorated during the past year, and this year there was quite a galaxy of members whose names had been inscribed on the roll of honour, including M. Fr. Spae, Commander of the Order of Leopold II; MM. Ch. Pynaert and V. Van der Kam, Officers of the Order of the Crown; MM. Alb. De Smet and Emile Praet, Chevaliers of the Order of Leopold II; and others too numerous to mention. Altogether, about sixty guests assembled around the tables in the large salon of the Taverne Royal, M. Firmin Lambeau, in excellent health, presiding with his accustomed geniality. The President proposed the first toast, to the recipients of decorations and the members of the press, M. Pynaert replying for the first-named guests, and M. Van Wyngaerden for the press. Other toasts followed, an orchestra enlivened the proceedings, dancing followed the banquet, and altogether a very gay and festive evening was spent by all present.

Mr. Gerald W. E. Loder.—Unanimously and enthusiastically elected President of the Royal Horticultural Society, on Tuesday last, Mr. Gerald W. E. Loder will have the full support of all horticulturists, because he is an able gardener, has a delightful personality, and is a capable administrator. In his garden at Ardingley he has fine collections of plants, and in these he takes a keen and knowledgeable interest and delight. His work on the Council has earned him such high respect and great regard that, after the death of Lord Lambourne, his colleagues honoured him by appointing him President in accordance with the terms of the New Charter, an appointment the Fellows present at the Annual Meeting endorsed in no uncertain fashion. Professional gardeners throughout the country will not forget Mr. Loder's interest in the Royal Gardeners' Orphan Fund, an interest he translated into hard work and a generous donation on the occasion of the Festival Dinner of this Charity in 1928. His capabilities as a speaker and chairman were demonstrated at that function, and he added to this reputation on February 26 by his chairmanship and his admirable address in moving the adoption of the Council's report. We add our congratulations to the many Mr. Loder has already received, and wish him a happy and successful term of office as President of a Society that only once before in its long history has been presided over by a great gardener—Thomas Andrew Knight—who was neither knight nor lord, nor needed a title to make him horticulturally famous.

MR. GERALD W. E. LODER.
President of the Royal Horticultural Society.

Beautiful Woodwork at Imperial Chemical House.—The home of Imperial Chemical Industries, Ltd., at Millbank, not far from the Houses of Parliament, is not only a wonderful building, it is a beautiful one. Although built with almost incredible speed, it is not "standardised," consequently no two of the several hundred rooms are exactly alike; indeed, there are scarcely two doors or two windows alike; in short, the British craftsmen have had their opportunity, and have taken full advantage thereof. The woodwork in the doors and panellings is a delight, and it is a pleasure to learn that the woods used came from different parts of the British Empire. For instance, the exquisite panelling in Lord Reading's room consists of Indian Laurel, dark and finely figured. Lord Melchett's room is panelled with English Walnut, several conference rooms are panelled with English Oak, while in one the handsome Australian Silky Oak (Stenocarpus salignus) is used with great skill and effect. Australian Black Bean, as used in a room on the first floor, is heavily figured, and lends itself to carving and moulding, as well as panelling. English Chestnut and Sycamore, Canadian Yellow Pine and Maple, Rangoon Teak and Mahogany from British Honduras, have been utilised in many parts of the building, either for doors, panelling or parquet flooring and skirtings, while the exquisite carvings in the Grinling Gibbons' style found in rooms on the sixth floor are in English Lime. There are no fireplaces or other ocular evidences of heating throughout the huge building, and yet, no matter what the outside condition may be, every room and corridor is pleasantly warmed. Everything possible has been done to secure the comfort of the directors and employees during working hours; leisure hours may be spent in the gymnasium, Badminton and Squash Racquets courts, etc., in the basement; while meals may be taken in the big Refectory or at the quick-lunch bar.

Permanent Allotments at Glasgow.—It has been recommended that the General Finance Committee should take into consideration the question of the expediency of Glasgow Corporation acquiring ground for permanent allotments, and that the Committee enter into negotiations with the owners of ground at present leased to the Corporation, extending to about twenty acres, with a view to its purchase for permanent allotments, if the land can be secured on reasonable terms.

Honours for Dr. R. A. Fisher and Dr. A. D. Imms.—These two members of the staff of the Rothamsted Experimental Station have been elected Fellows of the Royal Society. This is one of the highest scientific distinctions in the British Empire, only fifteen Fellows being elected each year and the choice ranging over the whole Empire. In addition, Dr. Fisher has been awarded the Weldon Prize of the University of Oxford for high distinction in Biological Science. With the election of Dr. Fisher and Dr. Imms to the Royal Society, Rothamsted now has three Fellows on its staff, Sir John Russell having been elected twelve years ago.

Pleasure Ground for Egham.—An anonymous donor has presented to the town of Egham, Surrey, an area comprising sixteen acres of land at Ankerwyke Corner, Egham, together with a refreshment chalet and attendant's cottage and tea garden, a large number of seats along the river bank at Egham, £200 towards the building of a bathing pavilion, and seven acres of land near Glanty Corner, Egham, primarily for the use of children. This generous gift has been accepted by the local Urban Council.

Cold Storage of Onions.—Experiments carried out at the Municipal Cold-Storage Works, Sydney, in connection with the treatment of Onions by refrigeration, have demonstrated that Onions can be kept in good condition in Australia from March until the end of December. This should greatly facilitate the distribution of the Australian Onion crop. Onions were placed in store, at various temperatures ranging from below freezing point to 38°F. The Onions were treated in two classes, (1) freshly-dug, and (2) well-matured Onions which had been dried in the fields for some days previous to being placed in the store. The varieties treated were Brown Spanish and Silver Skin. After three months, specimens were taken out of the cold stores and examined; they were found to be in excellent condition and of good appearance, especially those stored in a temperature below freezing point which, in the case of Onions, is 29°F. Brown Spanish withstood the thawing process well, but with the Silver Skin Onions it was found that unless they were thawed gradually they deteriorated in value. At the end of six months the remaining Onions were removed from the cold-storage and defrosted very gradually, when they were found to be in excellent condition; they compared very favourably with fresh Onions. It is interesting to note that these results, in the main points, are similar to those obtained from experiments conducted in America in the cold storing of Onions.

The World Supply of Lemons.—According to a recent issue of *Citrus Leaves*, Italy is the leading country so far as the exportation of Lemons is concerned, 7,000,000 boxes being dispatched to foreign markets each year. The annual Lemon crop of California is given as between 6,000,000 and 7,000,000 boxes, which is insufficient for home consumption, Lemons having to be imported into the United States in large quantities. Spain's annual production of Lemons amounts to approximately 300,000 boxes, but the greater percentage is consumed locally, while it is also stated that Palestine, Australia, South Africa, Sicily and some of the other smaller countries in which Lemons are cultivated commercially, barely produce enough for their own requirements.

Tree-planting of American Roadsides.—The *National Nurseryman*, of Hatborough, Pennsylvania, gives some interesting particulars of the work which is being done by the Massachusetts Department of Public Works to beautify the roadsides by judicious planting of native trees, shrubs and perennial flowers. The department is empowered by law to make roadside improvements, the work including such planting, replacements, and care as may be necessary. When a road is laid out as a State highway, it is generally made sufficiently wide to provide an area on each side for roadside improvement. No tree, shrub, or plant within such a highway can be cut, removed, or new ones added without a permit from the Department. The State has a nursery at Palmer, where trees and shrubs are propagated, and where the highway landscape supervisor trains men in the care of trees and in roadside beautification.

Gwydir Castle.—Admirers of the ancient and beautiful mansion known as Gwydir Castle, one of the most historic Tudor mansions in the country, will be relieved to hear that it has been purchased by Dr. G. H. B. Kenrick, K.C., to save it from the possible fate of being taken to America, or at any rate, becoming the property of an American owner. The first owner of the Castle, which is situated at Llanrwst, was Howell Cottmor, who fought under the Black Prince at Poictiers, and it was rebuilt in 1480. It came into the possession of the Wynn family in 1678, and remained in that family until eight years ago. The Dutch garden, with its rows of clipped Yews, is famous throughout the country; one Yew is stated to be over 1,000 years old. A fine specimen of Wistaria sinensis, covers the courtyard wall, and in the garden are two Oaks planted by the present King and Queen, who visited Gwydir in 1898. A suggestion has been made that the local authorities should organise a scheme to take over the Castle and gardens, and make them a place of public resort. It appears that it is not Dr. Kenrick's intention to live there himself.

Aid for Frost Victims in Belgium.—On the initiative of the Comte de Kerchove de Denterghem, Governor of East Flanders, Belgium, a collection is being made among horticulturists in aid of the small cultivators and nurserymen in the province of East Flanders whose produce has been destroyed by the extreme cold of the past few weeks. A special committee is being formed to organise the collection, under the presidency of M. Lucien de Cock, the well-known secretary of the Ghent Floralies.

Texan Horticultural Development—Horticultural research is making great strides in the United States, and we are not surprised to learn that under the direction of Mr. Hamilton P. Traub, the energetic Chief of the Division of Horticulture, Texas, there are to be eight experiment stations in various climatic sections of the State. The nurserymen of Texas are to co-operate with the Division in the experiments to be carried out, and will supply a good deal of the plant material necessary. It is believed that within a period of three years Texas will be well organised from a horticultural point of view.

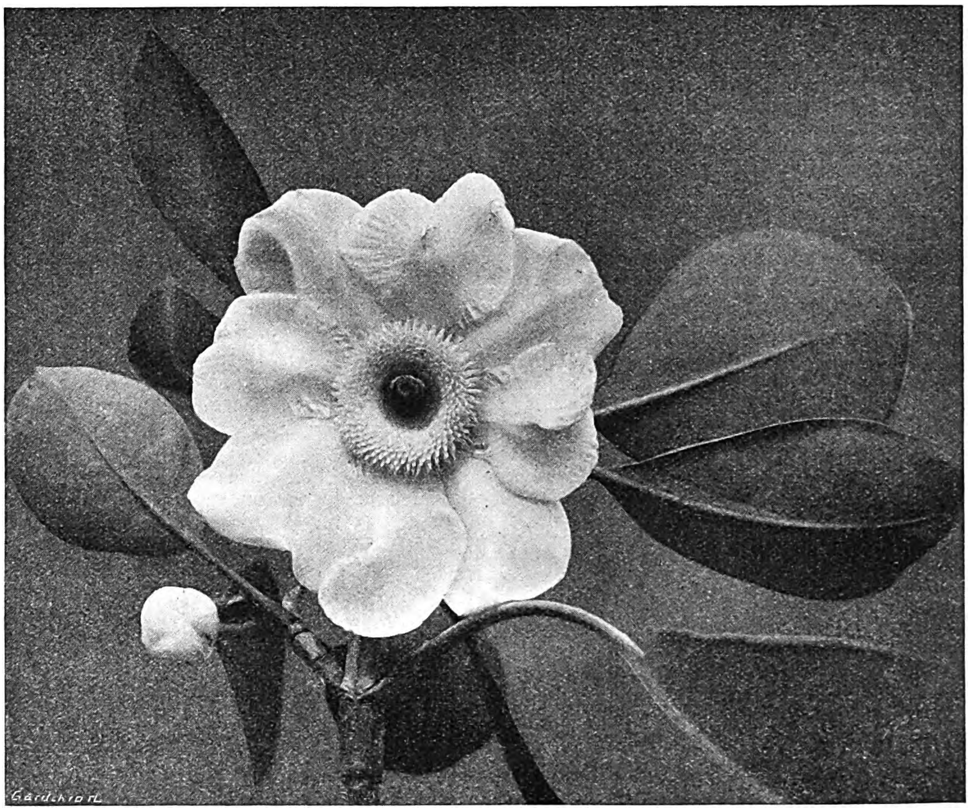

FIG. 77.—CLUSIA GRANDIFLORA.
(see p. 158).

Apple Marketing in Canada.—Commercial growers of Apples in British Columbia, owing to the magnitude of their crops, are adopting new intensive methods for the disposal of their fruits. Service stations for the distribution of them are being set up in important markets, and cartons of six or twelve Apples are stocked at these for sale to small purchasers. Apples are also being peddled in slot machines at five cents. each. It is also announced that British Columbian Apple growers may also seek to develop the at present neglected markets in Denmark, Sweden, Norway and other European countries.

Legacy to a Gardener.—The late Mrs. Emma Batty, of Cromwell Road, Hove, who died on November 23, 1928, left £200 to Mr. H. Ward, for many years gardener to her sister, Mrs. Campbell, of Charing.

Priority Right for Name of New Rose.—In the autumn of 1928, a French raiser exhibited a new Rose at a meeting of the National Horticultural Society of France; with the authority of M. Briand, the variety was named Aristide Briand, and this name was registered in November last, under the rules of the Fédération Horticole Professionelle Internationale, and published in the horticultural press. In December, 1928, an American raiser informed the President of the Rose section of the French Society, that he had the permission of M. Briand to give the name Aristide Briand to a new Rose. A special committee of the National Horticultural Society of France at once examined all the papers and dates concerned, proved that right of priority for the name belonged to the French raiser, and subsequently notified the American raiser that "Aristide Briand" could not be used by him, but suggested the use of President Briand, or Ministre Briand, as alternative titles to the one he had, unfortunately, chosen.

Appointments for the Ensuing Week.—MONDAY, MARCH 4: East Anglian Institute of Agriculture lecture. WEDNESDAY, MARCH 6: National Carnation and Picotee Society's meeting; Wimbledon and District Gardeners' Mutual Improvement Society's meeting; Rotherham and District Horticultural and Chrysanthemum Society's meeting; Gainsborough Allotment Holders' Association's meeting. THURSDAY, MARCH 7: Royal Caledonian Horticultural Society's meeting; Western Commercial Horticultural Spring Show (two days); Bideford and District Horticultural Society's meeting; Sundridge and Brasted Horticultural Society's meeting. FRIDAY, MARCH 8: Royal Horticultural and Arboricultural Society's meeting. SATURDAY, MARCH 9: Leeds Paxton Society's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Cypripedium villosum.*—This fine addition to an interesting genus was lately exhibited to the Horticultural Society, when it received a Silver Knightian Medal. Mr. T. Lobb found it wild in the province of Moulmein at an elevation of 5,000 feet above the sea, and sent it to Messrs. Veitch, who, we believe, are its sole possessors. It most resembles C. insigne, differing more especially in the following particulars.—The scape is shorter than the leaves, and shaggy, with long, purple hairs; the petals are singularly unequal-sided, the posterior half being twice as broad as the anterior, and much undulated; they are, moreover, notched at the point, as if a piece had been struck out by a circular punch; the lower sepal is apiculate, and not merely obtuse. There is a general resemblance in colour, but the upper sepal instead of being decorated with dark, circular spots, has merely a deeply discoloured set of veins along the middle, and the petals, which look as if varnished, are a rich, warm brown on the upper or posterior half, but green on the lower half, with a deep rich brown line of separation. *Gard. Chron., March 4, 1854.*

Publications Received.—Fourth *Annual Report* of the Imperial Forestry Institute (1927-1928).—*The Gardener's Year Book*, 1929, edited by D. H. Moutray Read; Philip Allan and Co., Ltd.; price 5s. net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Sobralias. — These tall-growing, Reed-like Orchids, which produce their richly-coloured flowers in succession at the tops of the new growths, are vigorous rooting plants and require copious supplies of water at the roots each time the soil becomes fairly dry; those specimens that have not been repotted for a season or two, and are becoming root-bound, will be benefited by an occasional application of soot-water. As the young growths advance some of the older stems that have flowered may be removed by cutting them out close to their base, to allow more air and light to reach the new stems, to assist their development. These plants thrive well in a light position, in an intermediate temperature. As the hours of sunlight increase, the undersides of the leaves should be syringed on favourable occasions, to prevent damage by red spider and other insect pests. As the new stems lengthen, they should be tied loosely to a neat stake to prevent them bending near the base. Small plants that require more root-room should be transferred to larger receptacles, in which ample drainage should be provided, using a compost of good fibrous loam, with a few dried Oak or Beech leaves, well broken up, and a small quantity of short fibre, with plenty of crushed crocks. The ball of roots should be in a fairly moist state when transferred. Very little water will be needed until the fresh roots are active, when a larger quantity will be required. Any division of larger specimens is best carried out later in the season, after the flowering period. Scale insects are often found in the axils of the leaves, and these should be removed with weak insecticide applied with a small brush.

Vanda coerulea.—This handsome and highly decorative Orchid always commands admiration when in flower during the late summer and autumn months. Plants that have been in a partial resting state during the winter are now showing signs of activity and will require in some instances, fresh rooting material. Water should be afforded sparingly until growth is more active. The pots and surroundings should be sprayed in favourable weather, and when the plants are well established they should be allowed plenty of sunlight and a free circulation of air night and day; they only require light shading from strong, direct sunshine.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Pot Vines.—If the flower clusters were reduced to the requisite number for the crop before they came into flower, and those retained have set well, no time should be lost in getting the fruits thinned, as every day lost detracts from the size of the berries, which are never too large on pot vines. After thinning the fruits, top-dress the plants with rich compost, bone-meal or vine manure, after which feeding with diluted liquid manure must be relied upon for sustaining the vines, as the soil in the pots will soon become exhausted. Syringe the walls of the house and surface of the bed, and keep the evaporating pans filled with diluted liquid manure; this will help the vines, provided it is not strong enough to injure the roots and foliage. Pinch back the laterals, and stop at the first leaf those which develop on shoots carrying bunches; those on the other growths may be allowed a little more freedom, as every full leaf exposed to the sun will help the development of the berries. Ventilation will require attention hourly, as anything approaching a check or chill may result in rusted or scalded berries. A little air may be given with a rising temperature of 75°, and gradually increased or reduced, as the case may be, until the temperature remains steady at 80°. Gradually reduce the air and finally close the house in time to secure a rise in temperature to 85°, when atmospheric moisture aided by gentle warmth in the pipes, will favour rapid development of the foliage and berries.

Late Vines.—These vines, having been pruned, top-dressed and cleansed, should now be started, closing the house at once. This is especially important where such varieties as Lady Downe's and Gros Colmar are grown. Both these varieties require a long season of growth to bring out their best qualities, and no other Grapes illustrate and confirm the opinion that improved flavour accompanies good colour, better than do these varieties, especially the latter. Berries deficient in colour are very inferior, and good colouring can only be obtained by starting the vines early. Mrs. Pearson, Mrs. Pince, and other late kinds are all improved by a long season of growth. The advantages of an early start are apparent in a season like that of 1927, when vines started of their own accord stood little chance of maturing a crop of Grapes. A little fire-heat may help in the autumn, but no amount of fire-heat will finish ripening the Grapes when once the leaves begin to decay. The best time to apply fire-heat is at the commencement of the season, when a little suffices. Should the summer prove hot and dry, no harm will follow, as artificial heat may then be almost dispensed with for the remainder of the season. All these Grapes require time as well as heat, hence the importance of an early start. Such varieties as Alicante, Gros Maroc and Alnwick Seedling are classed as late Grapes, but they do not require quite so long a season; Muscats, however, are best started in February.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Layering Rhododendrons, etc.—The operation of layering Rhododendrons and other shrubs may be carried out at any season, but spring is usually regarded as the best time. Layering is a simple method by which good plants of choice varieties may be obtained in a short time, yet it is seldom adopted in private gardens. With Rhododendrons, as with other plants, it is essential that the part layered is fixed firmly into the ground by pegging it down, using strong Hazel or other pegs, or bent wire. It is also important that the layers be placed at a sufficient depth to ensure a regular supply of moisture during the summer. Before layering them, the stems should be cut partly through or notched, to check the flow of sap and to cause roots to be emitted sooner. Unless the soil is of a peaty nature, it will be advisable to surround the part layered with a compost of peat and leaf-mould in the case of Rhododendrons, Azaleas, and other peat-loving shrubs. As a general rule, Rhododendrons are best left for two years before severing the layered portion from the parent plant; some may require longer if there has not been a constant supply of moisture. The majority of deciduous shrubs may be rooted from cuttings of either soft or hard wood, but there is sometimes the lack of accommodation to practice this method and, where only a few plants are required, layering will be found a ready means of securing them. These layers will, as a rule, be ready to sever from the parent plants at the end of the first season.

Aquilegias.—As with some other herbaceous plants, the best results with Aquilegias are obtained by raising them from seeds annually, especially in the southern parts of the country, where they are not so long-lived as in the north, and, after the first season of flowering, soon lose vigour and dwindle away. To secure good specimens for planting in their flowering quarters in the autumn, seeds should be sown now without delay, as Aquilegias require a long season of growth if the best results are to be obtained. If space is available in cold frames during winter, I have found sowing seeds in early autumn, pricking out the seedlings when large enough into boxes, and wintering them in frames, then transplanting to well prepared nursery beds during early April, a good method. The few extra months of growth thus secured afford the necessary time to build up strong, vigorous crowns which give excellent results. There are many well-known strains of the long-spurred section, which are the most useful for garden decoration. Some firms offer distinct colour varieties, but it is impossible to procure a strain which is sure to come true to colour. The nearest approach to trueness is secured in shades of blush and blue. Among Aquilegia species, the most popular is A. glandulosa, from Siberia. This delightful plant, of close, tufted habit, with large flowers of a beautiful dark blue, grows to about nine inches high, and is ideal for grouping on the rock garden. It likes a deep, moist, well-drained, sandy soil, and resents disturbance when established; it loses vigour after a few years, therefore periodical sowing should be practised to keep up a supply of healthy plants. A. coerulea is a slender plant, in height ten to fifteen inches, useful for planting on large rock gardens. It has not a robust constitution and should be raised annually from seeds. A variety of this known as A. c. Mrs. Nicholls has much to recommend it as a choice plant for the front of the herbaceous border. Growing about eighteen inches high, it is a vigorous grower and bears flowers of a pale Cambridge-blue. A. alpina, another useful sort for the rock garden, grows to about twelve inches in height and has flowers of a dark blue; it likes a moist, sheltered spot, in sandy loam. A. pyrenaica has flowers of a bright lilac-blue. For the herbaceous border, A. chrysantha, from California, is one of the best of the species; it grows to about four feet high, its flowers being deep yellow, tinted with cream and pink at the base. A. Skinneri, in its true form, is a rare plant, with greenish-yellow flowers, the long spurs of which are bright orange-red. This species, like many others, gives the best results if raised from seeds each year.

HARDY FRUIT GARDEN.

By Henry H. Cook, Lecturer in Horticulture, Reading University.

Strawberries.—In recent years the cultivation of the Strawberry in this country has given considerable anxiety to private and commercial growers alike. What was at one time considered a profitable subject to grow, particularly in Kent and Hampshire, Devonshire and Cornwall, is now a very risky commercial proposition. Where the plants do grow the yield of fruits is most unsatisfactory. But, in the main, the plants have absolutely refused to make headway. Various suggestions have been put forward to account for this decrease in cropping powers and failure of growth, such as that the soil has become Strawberry-sick; that varieties propagated vegetatively for many generations undergo a natural deterioration; or that it is due to the presence of a virus disease. The decline is very serious in private gardens, but the loss must be considerably greater to commercial growers. There is every reason to hope, however, that a new lease of life has been given to the Strawberry, for investigations conducted at Long Ashton, Bristol, by Messrs. Ball, Mann and Staniland, have definitely proved that the plants have two periods in which they produce roots, viz., July, August and early September, and again towards the end of March and in April. These observations show that no sooner is a runner planted in July, than the root system begins to develop. Strong laterals extend from the main roots, and others are produced adventitiously from just beneath the basal leaves. The crowns grow but very little during the autumn months. By March, more fine lateral roots (feeders) are produced, and by the end of April they are very numerous and are, of course, all important as organs of food supply. Bearing these points in mind, every encouragement should be afforded the plants during these two periods. In July, after the crop has been cleared, form a mulch by hoeing a couple of inches deep between the rows, and drawing the loose soil up about the base of the plants, immediately below the bottom leaves, for it is at this point that the plant emits a fresh ring of main rootlets. The earliest opportunity should now be taken, when the ground is in a workable condition, to stir the soil between the rows with the hoe or hand cultivator, and to apply a top-dressing of artificial manure. The following mixture should suit most soils:—four parts of fine bone-meal, or bone-flour; two parts of sulphate of potash, and one part of sulphate of ammonia. Apply one good handful per yard of row, and sprinkle it close up to the plants, avoiding the foliage. It should be lightly worked into the surface soil, but farmyard manure should not be applied yet, unless it is forked in, as it only tends to prevent the warmer atmospheric air from reaching the roots. New plantations formed last July or August should be gone over carefully, and any of the plants which have become loosened at the roots by frost should be made firm again. Ground which has been prepared by trenching, etc., for a new plantation, should first be cropped with something that will mature and be cleared by mid-July, such as early Peas or early Potatos. These will leave the soil in ideal condition for Strawberry planting.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hatfield, Hertfordshire.

Hydrangeas.—Young Hydrangea plants that were propagated last season and have been wintered in cold frames or in a very cool house, may now be started into growth. The temperature at this stage may be from 50° to 55°. Until growths and roots are active, a little care should be exercised with regards to watering, but when they are in full growth and in a healthy condition they require ample supplies of water, supplemented by frequent applications of liquid manure. Hydrangeas may now be secured in quite a number of colours, blue-coloured flowers being the most favoured, and several substances are used to cause the blooms of Hydrangeas to take on this colour. There are several proprietary articles recommended to attain this end, but much will depend on their constant and regular use. Older plants may still be allowed to remain in cool-quarters to provide a succession to the younger ones, but they must be examined occasionally as they should never be allowed to get too dry.

Malmaison Carnations. — Young plants obtained by layering last August, which have been wintered in a cool house in sixty-sized pots, may, now that the days are lengthening, be potted into larger receptacles. The compost should be of an open nature and, in such condition, may be made tolerably firm by ramming. Two-year-old plants that were potted on last autumn may now be watered more freely than of late; weak soot-water will prove very beneficial to growth and, a little later, concentrated Carnation manure may be afforded, although care is necessary not to use this too freely, otherwise the centres of the blooms will be coarse. Frequent fumigating to keep aphis in check is necessary to obtain the best results.

Pelargoniums.—Old Pelargonium plants that were cut hard back last autumn will now be starting into growth and, if they are developing too many young shoots, they should be disbudded. Rooted cuttings that were potted singly into small pots may now require to be transferred into larger receptacles, and when they are well established in the new compost their growths should be pinched back to ensure a bushy habit. Grow the plants in a cool house on a shelf near the roof-glass to favour the development of short, sturdy growths, and fumigate or spray them at short intervals to ward off attacks of green fly.

Statice Suworowii.—This Statice is useful for greenhouse decoration. Seeds may be sown now in an intermediate temperature and, so soon as the seedlings may be handled safely, prick them out in pans or shallow boxes, subsequently placing them singly in small pots, from which, when sufficiently rooted, they may be transferred to five-inch pots, in which they may be flowered. Care is always necessary when affording these plants water at the roots for, if once over-watered in their early stages, they will end in complete failure. Later, a successional batch may be sown to produce flowering plants at the end of the summer.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Potato Onions.—These, which are superior to Shallots, may now be planted. The sets should be planted twelve to fourteen inches apart, in rows eighteen inches apart. The bulbs may be planted with a trowel. When they have matured, they may be pulled and dried off in the same way as for Shallots. The bulbs are much larger than those of Shallots and are more after the type of Onions.

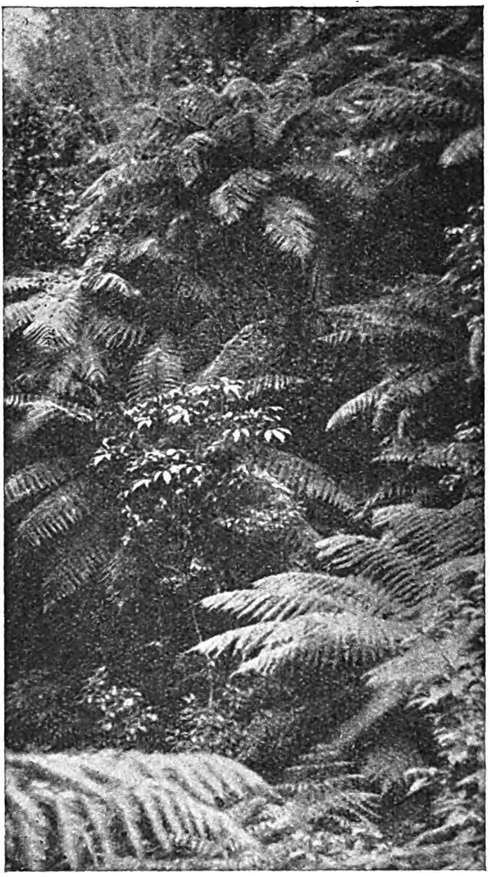

FIG. 78.—NEW ZEALAND FOREST.

Dicksonia squarrosa and Melicytus ramiflorus.

(see p. 161.)

Garlic.—Garlic should be planted now, preferably in a corner where it may remain. Garlic should be replanted every three or four years.

Seed-sowing.—Seeds of Celery, Celeriac, Parsley, Lettuce, Cauliflower and Brussels Sprout may be sown in boxes and germinated in heat. Snowball Turnip, and Beetroot, may be sown in frames to provide an early supply of roots.

Digging.—The ground from which Celery has been removed should be dug as deeply as possible, marking each end of the trench with a stake. This ground may be utilised for tall-growing Peas, the seeds being sown where the trenches were. Other vacant ground should be cleared of rubbish and then dug, dressing it, if necessary, with new lime. Another method of applying the lime is to place it in heaps on the ground after it has been dug, to allow it to slake itself, after which it may be distributed evenly and forked in, taking care not to leave the lime in thick patches; mix it well with the soil during the process of forking; if it is left in patches it may harm the roots of plants coming into contact with it.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

The Rock Garden.—Should favourable weather be experienced, March is a busy month in the rock garden. All decayed foliage, weeds and moss should be removed, and, if any replanting is to be done, the sites should be prepared, filling the pockets and beds with suitable compost. I find most alpines grow and thrive in a good, sandy loam, to which a fair quantity of sharp chips has been added. This may be used as the staple soil, leaf-mould, peat, or lime being added to suit the various plants. Established alpine plants should be top-dressed, using compost similar to that prescribed for planting, and the soil between them should be pricked over with a hand-fork. Planting should be done about the middle of the month. Autumn-rooted cuttings of alpines do splendidly if planted straight from the cutting frame; they may be planted more closely than pot plants, and consequently cover the allotted space in a shorter time. Endeavour to plant large patches of the various subjects if room permits, to secure as bright an effect as possible. Protecting material—panes of glass, etc.—that have been used for covering winter-moisture-hating subjects, should now be removed, as the lengthening days and more abundant sunshine render them unnecessary.

The Wild Garden.—Beds or specimen plants of Rhododendrons and Azaleas will benefit greatly if afforded a good top-dressing of peat or leaf-mould, although a good mulch of cow-manure, if procurable, is much better but, being rather unsightly, should be partly covered with soil. Cornuses and Willows, which are grown for winter effect, should be cut hard back now. Prune all shrubs which flower on the current year's wood, if this should be necessary. Many of these shrubs do fairly well without pruning, if room is allowed for their development, but a few, Hydrangea paniculata and Buddleia variabilis, for instance, do better if pruned rather hard. Remove all suckers from grafted Lilacs, Rhododendrons, etc. Planting of all deciduous trees and shrubs and all types of Roses should be finished at an early date.

Seed Sowing.—If a suitable opportunity occurs, a sowing of a good round-seeded variety of Pea may be made in a south border. Broad Beans may also be sown, Aquadulce being the best early variety, but if the ground is wet, defer the sowing for a week or two. If cloches or hand-lights may be placed over the seeds when sown, the resulting plants should be quite as early in producing crops as those raised in boxes under glass and planted out.

Sweet Peas.—Transfer autumn-sown plants, which are to be flowered under glass, to their final quarters, whether pots, boxes or a bed. They should be grown in light, sandy loam, not too rich, it being better to depend on surface feeding or applications of liquid manure after the first flowers develop than to give them a rich compost. Thoroughly water the plants before turning them out of the small pots, so that no further watering will be required until they have obtained a good root-hold in the new soil.

Pricking-off Seedlings.—As seedlings attain the rough leaf stage, prick them off at once and place them in a slightly warmer atmosphere for a few days; but hardy plants, Cauliflowers, Cabbages, Onions, Lettuces, etc., should not be kept for any length of time in a high temperature, or failure may result. So far as possible, place the seedlings so deeply that the cotyledons touch the soil, whether in pots or boxes.

General Work.—All growing plants under glass, with few exceptions, will relish a good sprinkling or syringing with clear water on bright days; this should be done early in the day, so that comparative dryness may obtain by evening.

PLANTS NEW OR NOTEWORTHY.

CLUSIA GRANDIFLORA.

According to Engler's classification of Guttiferae, Clusia is one of two genera forming the tribe Clusioideae. The genus comprises nearly a hundred species, inhabiting tropical America and the West Indies. They are mostly climbing epiphytes, usually destroying the trees on which they grow by strangling them. Of this comparatively large genus only a few species are cultivated in this country.

Under cultivation Clusia grandiflora is a strong-growing evergreen, requiring plenty of room in which to develop its horizontally extending branches. The leaves are thick and leathery in texture, dark green above and pale beneath, with a conspicuous mid-rib. Both surfaces are perfectly smooth, bearing a marked resemblance to those of Ficus elastica.

The flowering of this plant in cultivation is very uncommon, and few had the pleasure of witnessing it in this garden a few days ago, when a plant only two years old and barely two feet in height produced a flower. After some period of apparent idleness the large, fleshy, terminal bud revealed its treasure. This uncommon sight was of very short duration, for without any gradual transition from bud to fully open flower, it appeared in the night and just as quickly made its departure.

The flower (Fig. 77) was some six inches across, and any suggestion of grossness was completely dispelled by the ethereal delicateness of the colouring of the petals. The latter, usually eight in number, are white and wax-like. At the base of each is an irregular band of pink, of a purity and brightness all too rare in colours. In the centre of the flower is a group of staminoides, agglutinated together and overlayed by a soft layer of resin, appearing as a yellow, glossy disc; surrounding this are rows of ivory-white stamens, about five hundred in number, the inner rows being much shorter than the outer rows.

Clusia grandiflora is dioecious, and the Cambridge plant is the male form.

A large specimen flourishes here in the stove house, and its big leaves, often measuring eighteen inches in length, are a feature of great attraction the whole year through. Planted about forty years ago in a ten-inch pot, it soon reached the limits of its allotted space. The centre was cut back to nine feet from the ground, and the result of that operation was the production of six strong limbs in the upper two feet, leaving a clear stem of seven feet. The branches have from time to time been cut back, resulting in other lateral growths, which have often been treated in the same drastic manner.

This specimen flowered annually for a considerable period (see *The Gardeners' Chronicle*, December 2, 1905, Fig. 147), until a few years ago, when it received a severe check due to the failure of the heating apparatus. Three flowers were usually borne at the end of a shoot, the central one opening first and hiding the two side buds which opened later, each bloom being from seven to eight inches in diameter.

Growing in a mixture of loam and peat, and afforded liberal quantities of moisture in the atmosphere and at the roots, its cultivation presents no great difficulty. If the roots are allowed to ramble, they will, as is evident from the specimen here, soon leave the pot and search further afield for nutriment and moisture. The natural tendency to produce aerial roots is plainly visible in this lovely epiphyte, although it is growing under normal terrestrial conditions.

Clusia grandiflora may be propagated by cuttings, although this is often a very slow process and from six to eighteen months are required to produce a plant. This obstinacy in rooting seems to be due chiefly to the large amount of callus formation, and the removal of part of this obstruction prevents unnecessary delay. *Leonard G. Atkins, Botanic Gardens, Cambridge.*

ALPINE GARDEN.

PENTSTEMON HETEROPHYLLUS.

It is generally admitted that Pentstemon heterophyllus is one of the most beautiful of all the species of Pentstemon, and although it is recognised as a plant of not long duration, for it has the habit of dying off suddenly without giving any warning of its intentions, it is yet so easy to propagate that this delinquency should not deter the planting of it. It may be raised with ease from seeds, although plants so raised are liable to vary in colour, while cuttings of the young growths taken during the summer and inserted in a bed of sand in a cold frame root readily, and, if grown on and wintered in pots, make good flowering plants for the following season.

P. heterophyllus is an attractive subject for the rock garden, being best planted in groups of three or four in a warm position, not too fully exposed to the glare of the sun, and in moderately light, loamy soil. It forms a bushy plant and produces, from a semi-woody, short main stem, during the latter part of summer, slender stems to a height of one foot or so, bearing slender, tubular flowers of clear, rich blue, pale-throated and wide-mouthed, and marked and flushed with purple colouring. These inflorescences are produced freely, so that a group of P. heterophyllus in full bloom is a magnificent spectacle and one which cannot fail to command admiration. If one cannot accommodate it on the rock garden, it might well be afforded a position at the front of the herbaceous border, or in other favourable positions.

RANUNCULUS GRAMINEUS.

Although the mountain Buttercups include many beautiful sorts which are popular for the alpine garden, few of them are more desirable than the lovely R. gramineus, from the European Alps. It is not uncommon and is by no means difficult to obtain, while under cultivation it flourishes if planted in a cool, but not shaded nook, in deep, loamy soil.

R. gramineus forms a tuft of, as its specific name implies, grass-like leaves, narrow, and of a lovely glaucous, bluish-grey colouring. These alone are very attractive, but when in association with them during late spring and early summer, the glossy, rich lemon-yellow flowers are produced, the appearance of this Ranunculus is indeed charming. For these flowers are of good size and substance, clear in their colouring, slender-stalked, and borne gracefully on erect stems to a height of up to one foot.

This species is quite distinct among the many members of its family, and its culture should present no difficulties, for it is easy to establish and is, when happy, free in growth. I have also seen R. gramineus used very effectively as a pot plant in the alpine house, to which treatment it responds well.

This Buttercup is frequently referred to as R. graminifolius, but R. gramineus appears to be its correct name. *Kent.*

SEDUM LYDIUM.

According to the late Mr. Reginald Farrer, this small Stonecrop "affects mossy damp places and stream-beds at sub-alpine elevations in the mountains of Lydia and Caria" (see *English Rock Garden*), and although I, personally, have not attempted to grow it under such conditions, I can hardly picture it giving more satisfaction than it does when grown in the hottest and driest of situations, in poor, sandy soil, for when so treated, S. Lydium develops into a close mat, barely more than one inch high, and its growths, closely packed with tiny, cylindrical and fleshy leaves, lose all semblance of greenness, and take on deep and rich bronzy colouring, which they retain throughout the year. These growths are, during summer, terminated with small and compact heads of dark-anthered, pinkish flowers, but, to my mind, the charm of this Sedum appears in the rich colouring of its stems and leaves, even although they may be produced under what would appear to be unnatural conditions.

S. Lydium, like the majority of its relatives, is free-growing, its growths rooting as they spread, and, being of low stature and compact growth, it may be employed effectively for planting in the interstices of stone-flagged paths or steps on the rock garden.

TANAKAEA RADICANS.

Among the many attractive plants which Japan has given us is the dainty little, dwarf evergreen, Tanakaea radicans, which, in English gardens, asks no more than a cool, semi-shaded position and a free root-run in peaty or leafy loam. If such conditions are available in the alpine garden, and the average well-constructed rock garden has many cool and sheltered nooks, this subject may well be afforded a place, there to form a close and spreading tuft of slender-stalked, elliptic-pointed, leathery and regularly-toothed, rich green leaves; or, if not desired on the rock garden, T. radicans may be established in the open woodland, in a position not too far distant from a path, for it is of lowly stature and must therefore be viewed closely to be fully appreciated.

Tanakaea radicans is sometimes shy in the production of its flowers, but when this failing has been overcome and it is happily established, the tufts become crowned, in late spring and early summer, with dainty sprays of small blooms, in general appearance not unlike those of a dwarf Spiraea, and in colour a creamy-whiteness, borne on stems six or eight inches in height. It is only recently that this plant has been offered in this country, but now many nurserymen have stocks of it, and no difficulty need be experienced in obtaining it. *M. W.*

FLOWER GARDEN.

CONVOLVULUS ALTHAEOIDES AND C. TENUISSIMUS.

Convolvulus althaeoides is a common plant in many parts of the Riviera, where it shows a partiality for hot, sunny railway banks and dry walls. It has a rambling habit, thrusting its long, slender growths among the herbage or any low bushes that may come in its way. The flowers are of the open vase-shape common to the genus, nearly as large as those of the familiar Bindweed (C. sepium), and in colour a soft, amaranthine-pink, with a deep purple eye. The lower leaves are ovate, but the upper ones are deeply cut into narrow segments; they are all hairy.

C. althaeoides does not seem to be much of a success in our gardens, save in mild districts, and even in such it needs a warm, sunny place. Although it is frequently listed by nurserymen, the plant they usually send out under this name is, as Mr. E. A. Bowles has pointed out (*My Garden in Summer*), not C. althaeoides, but C. tenuissimus. This latter is easily distinguished by its greyer, almost silvery, leaves and stems, its more vigorous habit, and general hardiness. The only points of resemblance between the two species are the multifid foliage, the size and shape of the flower, and the twining, straggling manner of growth.

But in addition to the whiteness of the leaves and stems of C. tenuissimus, there is a difference in the colour of the blossoms, those of the latter being a brighter, almost rosy-pink. C. tenuissimus is an exceedingly attractive subject, but one that must be used with care, for it is a most enterprising traveller. I once had to take up a four-foot path and several square yards of rock work in my efforts to eradicate it, and even then it was only after years of pinching off every scrap that appeared that I finally saw the last of it.

Even so, this is such a charming plant, and its rosy blooms are so delightful in their setting of finely-cut, silvery foliage, that it is well worthy of being given some sunny corner of poor, stony ground, where it may weave its elegant tangle without jeopardising the lives of its neighbours. *A. T. J.*

TREES AND SHRUBS.

SALIX LANATA VAR. STUARTII.

Mr. J. Fraser (February 9, p. 107) rightly states it would be well to have the correct spelling of the name of this excellent little Willow. I saw it first in Mr. Clarence Elliott's nursery in the spring of 1926, and noted it as different from any form with which I was familiar. Strangely enough, two or three days afterwards Mr. H. E. Mason, of Alderley Edge, wrote offering me a plant and some cuttings for Wisley, which I gladly accepted, and it and they are now growing well. With them, Mr. Mason kindly gave its history. From this I gather that the plant was raised by the late Dr. Stuart, of Chirnside, N.B., after whom it was named. The correct spelling of the varietal name is, therefore, clearly "Stuartii."

The whole of the stock came into Mr. Mason's garden through Mr. John Wood, of Fitzroy Square, and Mr. Mason distributed cuttings to the Donard Nursery Co., to Mr. C. Elliott, and to certain private gardens.

The exact status of the plant is, perhaps, a little doubtful, and I hope Mr. Fraser may be able to clear it up. A herbarium specimen here from Mr. Mason's garden is endorsed by Mr. D. A. Haggart, who knows S. lanata well in its native Scotch haunts—"Salix lanata × lapponum or S. lanata × lapponum × repens . . . I think the cross S. lanata × S. lapponum the more probable." *Fred. J. Chittenden, Wisley.*

GENISTA AETNENSIS.

In a genus largely composed of dwarf or even prostrate shrubs, this species is of exceptional height, attaining, as it may, to twenty feet, with the appearance and trunk of a small tree. Nor is this height reached at the expense of decorative qualities, as happens with some of its allies, for the Rush-like, pendulous branches will clothe it almost to the ground level and so conceal any tendency to legginess. These slender growths are almost leafless, of a shining, greyish-green colour, and carry, in late summer, a shower of golden-yellow flowers, which are usually borne singly, but sometimes in pairs. The flowering period is often quite prolonged, scattered blossoms appearing until September.

Genista aetnensis is a native of Sicily, being found on the slopes of Mount Etna, as its name denotes. In cultivation it seems to require a warm, fairly sheltered spot, and rather dry or sandy soil, so that a wall is often a good position for the species. Nevertheless, it will grow to its largest size even when not so situated, provided there is good drainage and a little shelter from cold winds. Propagation may be effected by seeds or by cuttings inserted in a cold frame. It was introduced into cultivation in 1826, and is figured in the *Bot. Mag.*, t. 2,674, under the name Spartium Aetnense. *B. O. M.*

LONICERA HEDGES.

On page 107 (February 9), your correspondent *F.* refers to the numerous kinds of plants which he has seen used for hedges, including Lonicera nitida. I wonder, has your correspondent seen a hedge of Lonicera ligustrina var. yunnanensis (now called L. pileata var. yunnanensis at Kew). While, undoubtedly, L. nitida makes a beautiful hedge, I think the ideal plant for the purpose should possess more rigidity, and it is in this particular that L. p. var. yunnanensis excels, for it is of stouter growth. The leaves are a little larger and of a darker green (which is no improvement) than L. nitida, but the stouter habit of the variety renders it better for a hedge. When grown as a bush it also seems to retain its leaves on the uppermost parts of the plant in a way that L. nitida does not. It seems to me that, perhaps, the popular taste has adopted the wrong subject in planting L. nitida so extensively for hedges. As I have heard of a spurious form of L. p. var. yunnanensis which does not possess the characteristics of the true plant, it may be that herein, in part, lies the explanation of the comparative obscurity of L. p. var. yunnanensis. *J. Matchett Watson, Killiney Nurseries, Co. Dublin.*

GORDONIA ALATAMAHA.

There are numbers of plants, decidedly good ones from the decorative point of view, which are very little cultivated. In some cases the reasons for their comparative exclusion from gardens are well justified and can usually be traced to perhaps a particular failing in the plant's make-up. In other instances the cause is more difficult to find and may be of a nature unrelated to the plant itself.

The Gordonia (or Franklinia) with which this note deals, belongs to this class of lesser-known plants. A shrub of indisputable merits, it has one unfortunate weakness, best expressed by that unsatisfactory term, "lack of hardiness." But even then it is doubtful if this weakness is quite so serious as to warrant the general neglect that, in the past, this plant seems to have encountered.

A native of North America, it is the hardiest of approximately thirty other members of a genus scattered for the most part over tropical and sub-tropical Asia.

Gordonia Lasianthus, the Loblolly Bay, was the first of the genus to be named after Dr. James Gordon, of Aberdeen.[*] It is the only other American species, and is occasionally met with, but its inability to withstand the rigours of our winters debars it from a place in northern gardens. One other, an evergreen, Gordonia anomala, is sometimes seen in the greenhouse or even in sheltered places outside in Europe, and to a lesser extent in America.

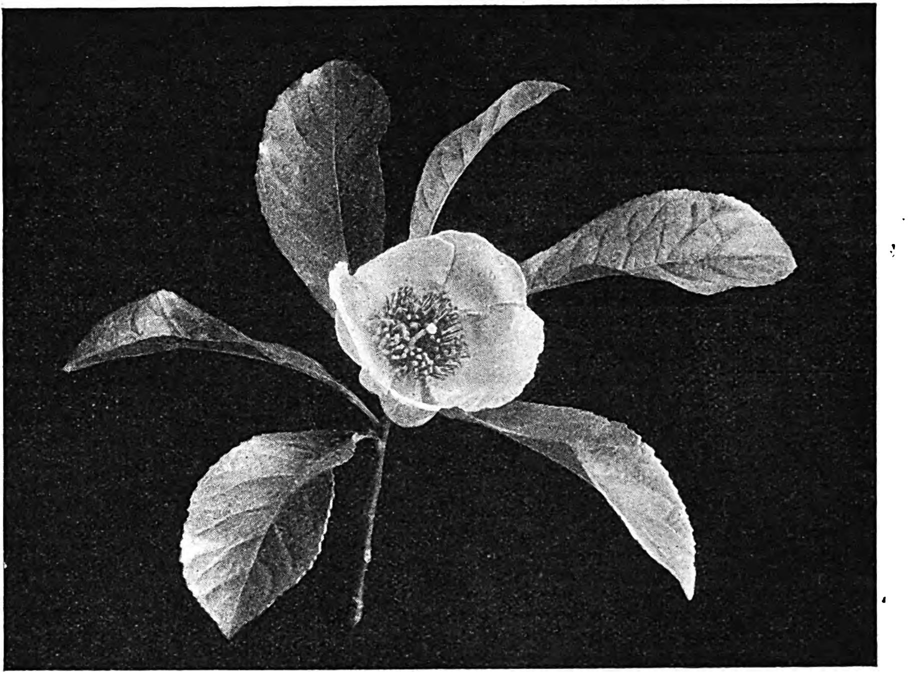

FIG. 79.—GORDONIA ALATAMAHA.

Gordonia alatamaha is a deciduous shrub, or tree, under good conditions attaining a height of thirty-five feet. A cultivated specimen once growing in the Bartram Botanic Garden, Philadelphia, was described as being so much as fifty feet tall.

In New England, as a result of frequent frost injury, it reaches a little over six or seven feet in height, and bears upright, basally-produced branches. In especially severe winters, however, it is liable to be killed back, possibly to within a few inches of the ground. In this event, the following season will see the production of plenty of young growths which, with favourable conditions, will bear flowers at the normal time.

The bark is smooth and the leaves, about twelve centimetres long, are obovate-oblong, serrate, hairy beneath and short-petioled. The short-stalked, silky, spherical buds open out into the purest white, Camellia-like flowers, golden-anthered, four-petalled, and about seven centimetres across. These are produced in continuous succession from the end of September until killed by frost. Should the plant be a fruiting specimen, and these are by no means common, the round, woody capsules will ripen the following year. It is this season of flowering, uncommon among hardy shrubs and at a time when the Gordonia is already exhibiting a bright display of crimson foliage, that makes this subject such a valuable asset to the garden.

Discovered in 1765 by John Bartram, at Fort Barrington, on the Altamaha River, Georgia, Gordonia alatamaha was first introduced into cultivation by William Bartram thirteen years later. From this original, and perhaps two subsequent introductions, all the existing specimens are descended. Since 1790, all efforts to re-locate this plant in its native habitat have gone unrewarded.

In this connection it is interesting to note that William Bartram[*] twice mentions that it was in the spring that he came across ". . . the new flowering shrub resembling the Gordonia, in perfect bloom as well as bearing ripe fruit," implying that the Gordonia flowered and ripened its fruits in spring and early summer. An early record for Philadelphia (1831) shows that it was then flowering in that vicinity in November, its normal season as we know it. This behaviour may be only natural, but it leads one to inquire to what extent such an apparently altered flowering period can be dependent upon changed climatic conditions.

Considering its "hardiness," or "ability to survive," in so cold a climate as Boston, it would seem highly probable that, although pronounced short-lived at Kew, there must surely be locations in the more favoured parts of Great Britain where this deserving shrub would be able to amply repay the little care necessarily expended upon it. Nevertheless, the Gordonia has still to be listed only among the decided rarities of the garden.

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[*] In a covering letter Mr. Skinner points out that Altamaha and alatamaha are correct renderings (Franklinia Alatamaha and Gordonia pubescens were earlier names). His statement, however, that Gordonia was named after Dr. James Gordon, of Aberdeen, is not in accordance with Bailey (*Standard Cyclopedia of Horticulture*), or with W. J. Bean (*Trees and Shrubs Hardy in the British Isles*), while *Bot. Mag.*, t. 668, states, "The name of Gordonia was given in honour of the late Mr. James Gordon, a very celebrated cultivator of rare plants in Mile-End, by Mr. Ellis, who settled the genus from a specimen which flowered at Benjamin Bewick's, Esq., at Clapham, in the year 1768."—Eds.

[*] *Travels in North America*, by William Bartram, p. 467, (Philadelphia, 1791).

During the last century a number of plants were recorded as flowering in England, but these are now, with few exceptions, if any, apparently non-existent. It is to be hoped that the more recent efforts to cultivate this plant will meet with every success.

Emulating its natural choice, a sheltered, moist situation on a soil inclined to be peaty, would be nearest the ideal, although in the matter of soil the Gordonia is not fastidious. *H. T. Skinner, Arnold Arboretum.*

LATE-SUMMER AND AUTUMN-FLOWERING SHRUBS.

DURING July, August and September, hardy flowering shrubs are few compared with those of the preceding three months. As the early part of March is a very good time for planting such subjects, the following selections of flowering shrubs may prove of value to intending planters.

The named varieties of Ceanothus are among the most showy of the late-summer and autumn-flowering shrubs, producing, as they do, from July until October, a succession of flower spikes in numerous shades of mauve, blue and pink. They delight in warm, sunny positions and well-drained, light and porous, rather than heavy, soils. The best flower spikes result from fairly hard pruning, shortening the old flowered shoots of the previous year back to within four to twelve inches of the main stems during March. A selection of the best varieties includes Gloire de Versailles, deep powder-blue; Henri Defossé, rich, dark blue; Marie Simon, a dwarf, free-flowering, pink-flowered hybrid; Gloire de Plantieres, deep blue; Ceres, rose-pink; Indigo, rich, deep blue; Perle Rose, carmine-rose; Pinguet Guindon, lavender, tinted pink; Topaz, bright blue; and Arnoldii, a free-growing sort with branching panicles of pale, powder-blue blossoms.

In all but the coldest localities the varieties of Hibiscus syriacus, or Tree Mallows, as they are termed, are very valuable autumn-flowering shrubs. They grow to ten feet high or more in the mild climate of the south and west, and positions in full sun should always be chosen for them, as H. syriacus is a native of the Orient, where the climate is milder and more sunny than that of Britain. The partiality of the Hibiscus to sunshine was well demonstrated during the hot summer of 1921, when the bushes produced clusters of blossoms all along their branches. Such a useful flowering shrub is worth a south wall or fence in cold northern gardens.

There are varieties with single and double blossoms, the former, as a rule, being the most pleasing. The best of these are Coeleste, light blue; Hamabo, white, with chocolate blotches; Rubis, ruby-red; and totus albus, white. Double sorts include Lady Stanley, white, blotched maroon; Duc de Brabant, red; Jeanne d'Arc, white, with rosy markings, and amplissimus, vinous-rose.

Two hardy Hydrangeas, H. arborescens var. grandiflora, from the United States, and H. paniculata var. grandiflora, from Japan, are valuable autumn-flowering shrubs in gardens where the popular Hydrangea hortensis fails. If subjected to fairly hard pruning each year in February or March, cutting the growths back to within a foot or eighteen inches of the ground, the plants grow three to four feet high and produce an abundance of large heads of milk-white flowers. Both are effective shrubs for grouping in the pleasure grounds and at the front of shrubbery borders.

Two Brooms are of special value for late summer-flowering. Cytisus nigricans, although introduced two centuries ago from Central Europe to British gardens, is not commonly cultivated. This shrub requires fairly close pruning each year in spring, before new growth begins, as the flowers are produced on the current season's growths. The pruning will keep the bushes to a height of from four to five feet, and from July to September many slender racemes of yellow blossoms will be produced. Seeds provide a ready method of increasing this species. The second Broom is Spartium junceum, one of the best half-dozen flowering shrubs for town gardens, although it does best when planted in open, sunny positions. The plants thrive in poor soils and are splendid subjects for dry banks. Its one fault is a long, gaunt habit of growth when left to fend for itself. The remedy for this is to nip off the ends of the shoots several times during the summer when the plants are young and, subsequently, to shorten a proportion of the growths each year in March. This treatment practically ensures a wealth of blossoms from July to October annually.

The New Zealand Veronicas are delightful flowering shrubs in sheltered positions, but in cold districts they are invariably damaged by frosts and cold winds. As a rule, they appear happiest in maritime regions. The hardiest of all is Veronica Traversii, an attractive evergreen bush up to five or six feet high and as much in diameter, which, in July, becomes covered with white flowers. Others deserving attention are V. angustifolia, white, tinted with lilac; V. anomala, white, tinted pink; V. Hectori, with white, pink-tinted blossoms; and V. Autumn Beauty, a free-flowering, dark blue variety of spreading habit, which attains a height of twelve to eighteen inches.

Olearia Haastii is a close-growing, evergreen bush of rounded habit, from about five to eight feet tall, and covered in July and August with clusters of white, Daisy-like blossoms. An occasional specimen of this Daisy Bush, ten or twelve feet high, may be met with, but by this time the specimens are rather loose-limbed. Few shrubs respond more readily to drastic pruning. Cutting the growths back hard to the old wood during April induces new shoots to grow freely from wood two inches or more thick, and by the second season good bushes result.

Two species of Clerodendron, namely, C. trichotomum and T. Fargesii, from China and Japan, attain the dimensions of small trees when trained on single stems. They are, however, more attractive when grown as large shrubs on a lawn, or in a shrubbery border. Both bear white flowers during August. C. trichotomum has dark blue, almost black, fruits, those of C. Fargesii being porcelain-blue. A third species, C. foetidum, from China, is only shrubby in mild localities. At Kew the stems are killed to the ground each winter, but vigorous young shoots grow from the stools up to four feet or more high, and are terminated in autumn by large corymbs of attractive, purple-red flowers. *A. O.*

ROSE BREEDING.

IN his lecture to the International Rose Conference, Mr. Osborne, of Kew, stated that there is scope for the production of a hardier race of Roses than the Hybrid Teas, a race capable of withstanding the Canadian winters. I quite agree with Mr. Osborne, and as I have carried out some experimental work with this end in view, some of the results may be of interest to other Rose-breeders.

On the whole, I have found that hybrids of R. rugosa, with even such an extremely hardy H.T. as Grus an Teplitz, are not reliably hardy, a row of seedlings of this cross having been killed, root and branch, during the winter of 1926-27. Our native species, or hybrids of them with other species, seem, to me, to give most promise as a good foundation for a new and hardier race. In this part of Canada we have three native species, namely, R. acicularis, R. blanda and R. suffulta. Of these three, I find that the first-named does not mate readily with other species, but a hybrid between it and R. rugosa will set seeds to the pollen of a great many other species and types. Crossed with R. Beggeriana, it has produced a shrub having glossy, rugose foliage, and rather thin-petalled flowers that are produced continuously from June until frost comes. The handsome fruits are twice the diameter of those of R. Beggeriana and are produced freely. This hybrid, and a few between the dwarf Polyantha Roses and R. rugosa, and R. rugosa × R. acicularis, are the only hybrids of my raising which have so far inherited the habit of continuous flowering. Many other hybrids having this R. rugosa × R. acicularis cross as seed parent have been raised and are under test for hardiness, including some having as pollen parents such fine varieties as Rev. Page Roberts, Madame Butterfly, Etoile de Holland and Grus an Teplitz. One of the latter, although it has not yet flowered, is a very vigorous and promising looking bush.

Rosa suffulta, like R. acicularis, I have found hard to work with, but have managed to secure hybrids between it and R. blanda alba, R. rugosa and Harisson's Yellow; some of these may prove fertile and therefore a basis for further experiments.

Rosa blanda has, however, proved the most amenable species, and I have succeeded in crossing it with many other Rose families, including R. rugosa, R. multiflora, R. Beggeriana, R. spinosissima and the old, double Pink China Rose. One of my R. blanda hybrids, which I have named Betty Bland, has double, pink flowers throughout June, and its bright ruby-red canes give quite a touch of colour to our winter landscape. It has proved both hardy and fertile.

Of course, a great many of my hybrids have proved quite sterile, several of them being mere freaks; in one case, having neither petals nor stamens. Curiously enough, some of the worst offenders in this respect have had the Moss Rose as pollen parent. Seedlings having Frau Karl Druschki as pollen parent have also been quite worthless and sterile. Quite a few of my hybrids have not been quite hardy here, and as hybrids of our native species, with the exceptions already named, flower on the old wood only, it is sometimes difficult to flower those that are killed back in winter. One hybrid between R. blanda and Clothilde Soupert was seven years old when it flowered first, and although I managed to fertilise R. blanda alba with its pollen, this hybrid has never produced seeds. Neither our native species nor their hybrids seem to take kindly to cultivation in pots.

I feel sure that under European conditions work of this kind could be carried forward far more quickly, and if some of the noted European Rose-breeders were to tackle this problem, I confidently believe that we would soon be rewarded with a race of garden Roses, descendants of our American and North Asiatic species, sufficiently hardy to withstand the most severe continental climate without protection. *F. L. Skinner, President of the Manitoba Horticultural Association.*

NOTICE OF BOOK.

Irises.

THIS little book* is intended primarily for American beginners in Iris growing, but it will no doubt be useful to those who are starting the cultivation of Irises in this country. There is a useful and interesting "Introduction," by Mr. Robert S. Sturtevant (Editor, American Iris Society), in which he states that Mr. Rockwell is just the man to write the book needed: "He knows Irises; but, quite as important, he knows what the gardener needs to know and how the information should be presented—conveniently and yet pleasantly." Incidentally, Mr. Sturtevant explains the task of the American Iris Society, and what he states of it, *mutatis mutandis*, may very well apply to our own Society.

Although a list of recommended kinds is given on pp. 79-82, the author observes (p. ix): "This book is designed to be used as a supplement to bulb catalogues and growers' lists. There you will find listed and illustrated, often in colour, not only the varieties of Iris mentioned in these pages, but the many fine new Irises which are introduced by dealers and Iris growers from season to season." The author gives full details as to the Iris itself—its varieties, requirements and enemies. He emphasises the good nature of the tall, bearded Irises as "being depended upon largely to take care of themselves," and concludes his chapter upon them: "The tall Bearded Irises are always a safe bet!"

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* *Irises*, by F. F. Rockwell—The Home Garden Handbooks series—price 4s. 6d. Macmillan Co., New York.

The book is well furnished with illustrations, of which there are ten pages, besides insets in the text. These, although not large, will be very helpful to the tyro. The beginner in America seems to get more help and encouragement than he does with us, although it may be hoped that the expansion of the Iris Society, and the Wisley Trials, will make up our deficiencies. We congratulate Mr. Rockwell on a very useful, unpretentious, sympathetic piece of work.

NOTES FROM A NEW ZEALAND PLANT HUNTER.

(*Concluded from p.* 141).

On the upper slopes of the mountains the mixed Podocarp forest usually gives way to Beech forest, composed entirely of species of Nothofagus, with practically no undergrowth except the natural regeneration of the trees, while the sheltered watercourses abound in Plagianthus (Gaya) Lyallii, probably the finest white-flowered tree in New Zealand, with which is generally associated a rampant undergrowth of crown-forming Ferns, especially Polystichum vestitum.

Forest conditions (Fig. 78) usually dwindle away between 3,500 feet and 4,000 feet, to be succeeded for several hundreds of feet by a belt of scrub consisting of a very heterogeneous collection of shrubs. The gigantic family of shrubby Veronicas (or Hebe, as it is now the fashion to term some of them) forms a dominant note in these upland shrubberies. Although several well-defined species are to be met with, many of them are of local distribution, and all seem to hybridise freely with each other, a failing extremely common in all the larger New Zealand genera, with the result that natural hybrids abound throughout the country. Other members of the scrub community are Cassinia fulvida, many species of shrubby Senecios, some of which are most attractive; Gaultheria antipoda, G. rupestris, Dracophyllums in great variety, and many species of Coprosma—a most confusing genus of dioecious shrubs, the species being most easily determined by study of the differently coloured, translucent fruits which are borne in great abundance. Another genus which has many members noted for their fine flowers is Olearia. The more common species are O. arborescens, O. ilicifolia, and their suspected hybrid, O. macrodonta, O. moschata, and O. avicenniaefolia, and it may be interesting to note that O. Haastii, familiar in British gardens, is extremely rare in the wild state in New Zealand. Lycopodium volubile, a fine trailing plant which is greatly valued for decorative work, is an inhabitant of the sub-alpine scrub areas, where it scrambles over the shrubs, its growths sometimes attaining twelve feet in length.

Above the scrub belt are the open rocky moorlands which are the home of so many gems of the New Zealand flora, and where the scrub and moors meet is the abode of that aristocrat among Buttercups, Ranunculus Lyallii. This magnificent plant may be identified by its large, peltate, concave leaves forming huge saucers in which rain-water collects. In its native country, this plant is commonly termed the Mountain Lily which, like so many other common names, is quite inappropriate. R. Lyallii, in growth form, is not unlike the common Caltha palustris, having the same type of fleshy leaves and juicy stems. The beautiful, snow-white flowers are borne in great trusses of twenty or more, each being from two to three inches across, with a number of bright golden anthers. The glossy, dark green leaves, quite fifteen inches in diameter, and the flower-stems rising two feet above the leaves, form a most stately plant, so a colony of R. Lyallii swaying in the wind is well worth climbing 4,000 feet to see. Another species of Ranunculus worthy of a place in the garden is R. Buchanani, which also bears white flowers, but is much smaller than R. Lyallii, and has its leaves deeply segmented after the style of the typical Ranunculus leaf. Both these species were described and illustrated in *The Gardeners' Chronicle* of December 29, 1928. R. Godleyanus, a fine species confined to the Mount Cook district, has flowers of good size and a very fine deep yellow, while the light green, almost entire leaves are broadly oblong in shape. It is a handsome plant which has scarcely known the bonds of domestication, so far.

Among the numerous grasses in the alpine meadows are found the small white Viola Cunninghamii; several species of Gentians (all the New Zealand species are white, and G. corymbifera is the most noteworthy), Geum parviflorum, and the beautiful, large-flowered G. uniflorum; several species of Astelia, and the wonderful Celmisias, of which C. coriacea is probably the best of the genus, despite the fact that it is one of the most widely-spread. This desirable plant, at its best, forms an erect rosette of silvery, lanceolate leaves, from the centre of which arise several scapes bearing heads from three to four inches in diameter, with a golden disc, and long, narrow, pure white rays. This superb form passes by almost imperceptible gradations into smaller varieties. The other species of Celmisia are many and varied. The growth-forms vary from erect rosettes two feet high to tiny species with leaves only one-eighth-of-an-inch in length, which creep along the surface of the ground.

Bulbinella Hookeri, a fine, golden-yellow flowered Liliaceous plant, is abundant in the sub-alpine meadows throughout the South Island. The herbaceous Senecios are undoubtedly the most striking plants in many areas; of course, where Ranunculus Lyallii and some of the finer Celmesias are in evidence, the Senecios have, perforce, to take a minor position, but when, in sole possession of an upland valley, where there is plenty of moisture and good drainage, they light up the landscape with the abundance of their beautiful blossoms in a manner almost incredible to those who only know their dowdy relatives. The two aristocrats are Senecio scorzoneroides and S. Lyallii, the former producing white flowers, and the latter yellow. They hybridise freely and with little trouble one may have all gradations of colour between the two types.

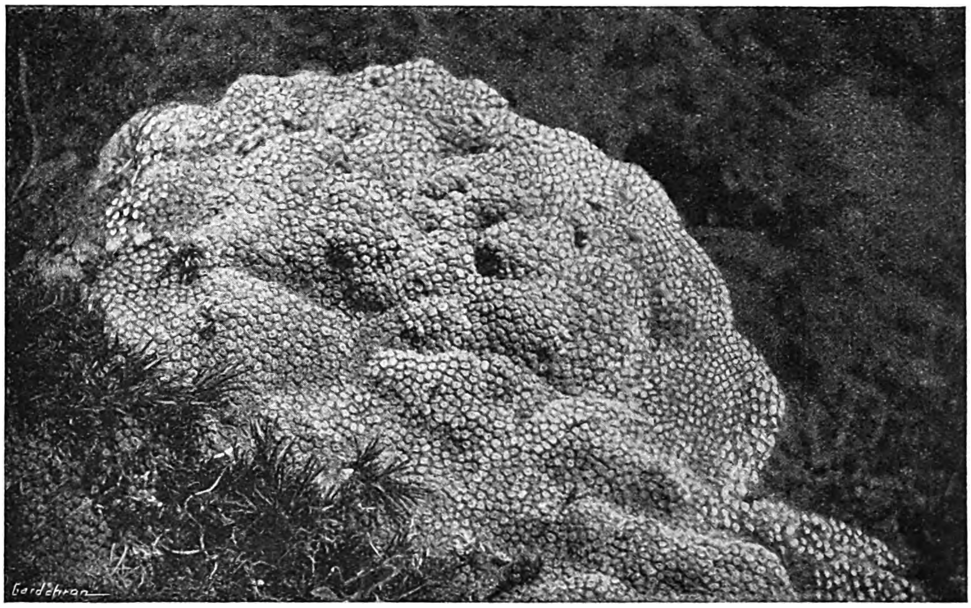

FIG. 80.—RAOULIA BUCHANANI.

The Aciphyllas are typical of mountain areas, the most abundant form being A. Colensoi, var. maxima, a plant of very stiff and rigid habit; the leaves are usually more or less bi-pinnate, the leaflets terminating in sharp spines; the dioecious inflorescences grow to over six feet high. There are many species of Aciphylla and they vary greatly, from the giant just mentioned to the tiny A. multisecta, which rarely reaches nine inches in height. An Antarctic genus of some note in the alpine flora is Ourisia. The common and beautiful O. macrocarpa has somewhat the habit of a Candelabra Primula. O. glandulosa and O. caespitosa are two beautiful carpet-forming species which inhabit moist, sunny moraines, where they produce numerous white blossoms during early summer.

The peculiar and well-known Vegetable Sheep, Raoulia species (Fig. 80) are inhabitants of dry alpine areas. These curious plants are very variable, the genus having been founded more upon habit than upon well-defined and distinctive characters. They are perennial herbs which bear numerous, densely-tufted heads, packed closely together, forming huge, rounded masses several feet long and sometimes over two feet high. When seen from a distance some of the species certainly look like sheep, so much so that shepherds have been known to send their dogs several miles to round up these "stray" members of the flock.

Owing to isolation, New Zealand, to which the nearest land-mass is Australia, over 1,000 miles away, has developed a very interesting flora, fully three-fourths of which is endemic. Many of these plants are justly famous in the horticultural world, but are extremely difficult to procure. It may be mentioned that so much as 10s. per ounce has been given for seeds of Ranunculus Lyallii within the past year.

Primitive New Zealand was either "bush" or tussock land, and in neither of these areas are there many striking herbaceous plants of high horticultural value. Therefore, it was not until the distant and inaccessible mountain valleys were explored that much of the country's interesting plants of horticultural value were brought to light.

There are many large genera in the mountain flora, and these seem to be in a state of movement, because although a number of well established species have evolved, there are still large numbers of unfixed natural hybrids, many of which are fairly widespread vegetatively, but seem incapable of producing fertile seeds. Therefore, it seems that natural hybridisation and inaccessibility are the two chief reasons why so many New Zealand plants have not yet come into general cultivation. *Dunedin.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XV.—At Camp II.

We stayed on at Chibaon until April 18, dispatching the loads as coolies came forward, which they did reluctantly. The air was thick with flying rumours; how there was an epidemic up the valley, and we were advised not to go on; how the young men of a certain village had barricaded the path and would not let us pass; and how another village had refused to supply us with transport or food—all designed to hamper, if not to turn us back. But as time went on, and little bands of coolies came and went with their loads, reporting that arrangements had been made for our reception at Meiliang, another two marches northwards, we paid less and less heed to this evil broadcasting, and went quietly on with our preparations.

During the fortnight I was here (April 5-18), we had six really wet days, and on six days practically no rain fell. When the mornings were fine and hot, a gale would spring up without warning in the middle of the day, blow for a couple of hours, and be succeeded by a brief thunder storm loosed from the western mountains. Thanks to our altitude, 3,250 feet, we escaped the horrors of the 'hot weather,' although even so, the temperature on fine days bounded up to 90° in the shade; but on wet or cloudy days it was only about 70°. The advantage of altitude was felt at night, the average minimum temperature being about 51°. We were camped in the midst of cultivation, in the heart of the village, and therefore we became 'the cynosure of neighbouring eyes.' Even our abridged toilets were carried out under close scrutiny, and it became embarrassing as well as disconcerting. There were always crowds of Mishmis with nothing to do except to watch us, although when we wanted coolies they just melted like clouds in the silent summer heaven; it was clear as daylight that they just disliked coolying, and, indeed, they had their own jobs to do.

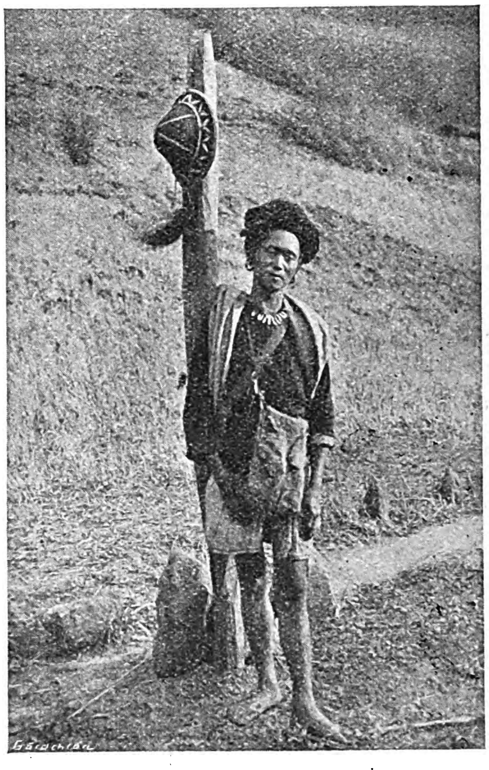

FIG. 81.—THE GAM OF MEILIANG.

He assisted Captain Kingdon Ward and is shown wearing a necklace of human teeth.

The broadly funnel-shaped valley which stretched away behind us to the horse-shoe ridge, was patched with cultivation, past and present. Most of the slope was clothed with high grass, and there were rougher parts, covered with trees. Two paths, both overgrown, led towards the forest, but it was a hot and tiring climb by either, sometimes through dense, secondary growth, and sometimes over newly-felled jungle, before one found oneself in the shade of the rain forest.

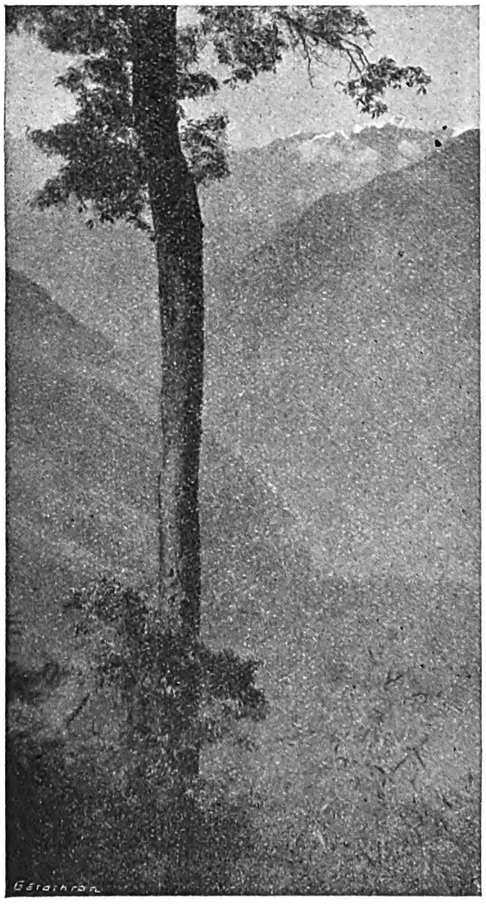

FIG. 82.—THE DELEI VALLEY, MISHMI HILLS.

Great activity prevailed in the fields, where weeding, burning and sowing were all going on feverishly. At this season, the Opium and Pea crops were ripe. Every hut had its Poppy garden of sleep, carefully fenced in; the flowers were nearly all white, a few red. The Peas were a tall variety with purple flowers like the wildest of the wild; but they were quite good to eat. For the next few weeks we almost lived on Peas and Sweet Potatos, and it was a bad day for us when the latter were finished. Eggs could sometimes be obtained, but fowls rarely. The fact is, when a Mishmi falls ill, he slays a fowl, and eats certain parts of its anatomy, which is supposed to cure him. Thus a fowl is a potential drug in case of disease, and as every man is his own doctor, few were found willing to supply us with food from the family pharmacopoeia, even at an exorbitant figure. Eggs, when available, were comparatively cheap, and we soon discovered why. We observed that they were always what are called 'shop eggs,' or just 'eggs,' at home—for we taught the cook to detonate those which had an electioneering look about them, at a safe distance; in short, the wily Mishmi never parted with an egg until the hen had given it up as a bad job. It was a well-hatched plot!

The village vegetation comprised Peach trees, Bananas, clumps of Bamboo, a few small Palms, and Albizzia Julibrissin, the latter very common wherever there were crops, and now in full bloom.

Mishmi huts (Fig. 84) are long and low and dark, built of Bamboo and thatched with grass; they are raised from the ground on piles, the space beneath being used as a pig-sty, while under the eaves, baskets are suspended for the family fowls. A few cattle are also kept, although for what purpose I could never discover; probably they are sacrificed in times of crisis, and used as medical comforts.

The secondary growth was a wild tangle of grass and shrubs, including the following:—Edgeworthia Gardneri, Alnus nepalensis, Ficus Cunia, species of Pieris and Gaultheria, Luculia gratissima, several species of Rubus, Buddleia, Saurauja, Coriaria, and Osbeckia; also the following climbing plants among others:—Smilax, Sabia, Crawfurdia, Porana, various Leguminosae, Menispermaceae, and so forth. The growth was very thick and quite impossible to penetrate. The temperate rain forest, on the other hand, is fairly open, there being comparatively little undergrowth, and that chiefly of Ferns and small Monocotyledons. Climbing plants are not nearly so abundant here as they are in the sub-tropical jungle below, although the epiphytic flora is probably as large and varied.

On April 8, I made an excursion into the forest, and on the 11th, Buttercup and I went for a long climb up the ridge, the day being fine and very hot. Following the path I had discovered, we made straight for the point I had reached on my first evening at Chibaon, and then turned up the mountain. At once we began to find Rhododendrons in promising variety. The first was a medium-sized tree 'Irroratum,' with flowers of daring purple, rasped with clusters of darker stars; not only is such a blackberry-and-apple colour unique in the section 'Irroratum,' but rare in the whole range of Rhododendron, hybrids included. In high lights, the flowers took on a more crushed-strawberry tint; but the shade varied a good deal, as did the spotting. To be seen at its best, this species requires a strong light, which, of course, it seldom gets inside the forest; but it showed up well along the crest of the ridge; the flowers last well, and the tree blooms over a period of four weeks, more or less. I suspect that an 'Irroratum' collected in the Seinghku valley in 1926, not seen in flower, is the same species; on that occasion I got very few seeds of it, as it had misflowered badly.

Just coming into bloom was a 'Thomsoni' Rhododendron with astonishing leaves nearly a

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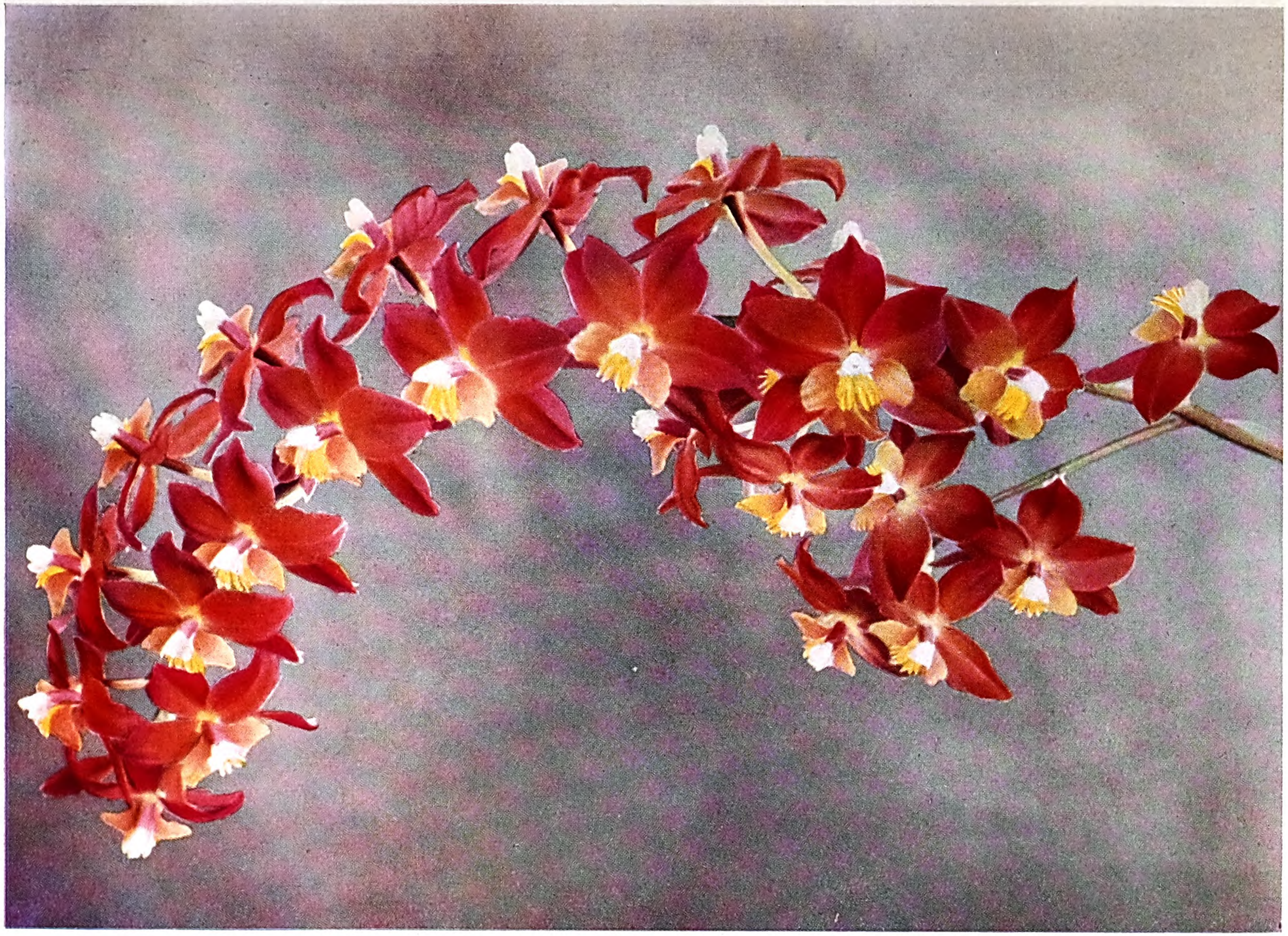
* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19, and February 2, 16, 23, 1929.

Supplement to "The GARDENERS' CHRONICLE."



ODONTIODA LAMBEAUIANA, WESTONBIRT VAR.

foot long and five inches wide; the buds had a hint of pink in them, but when 'Big Bill Thomsoni' opened, the enormous bells were virginal-white, in trusses of three or four—there was no room for more. Big as the leaves were, they did not hide the flowers, and except in the depth of the forest, the bush did not become a tree; it was, in fact, a very manageable size, and its charms were enhanced by the smooth, tawny-purple bark and weirdly contorted branches. 'Big Bill Thomsoni' is a fine Rhododendron, and, moreover, it was the first of several which I had not met with in the Seinghku or Di Chu valleys during my expedition of 1926; as my alpine camp in the Seinghku valley was barely sixty miles distant, in an air line, this was matter for congratulation.

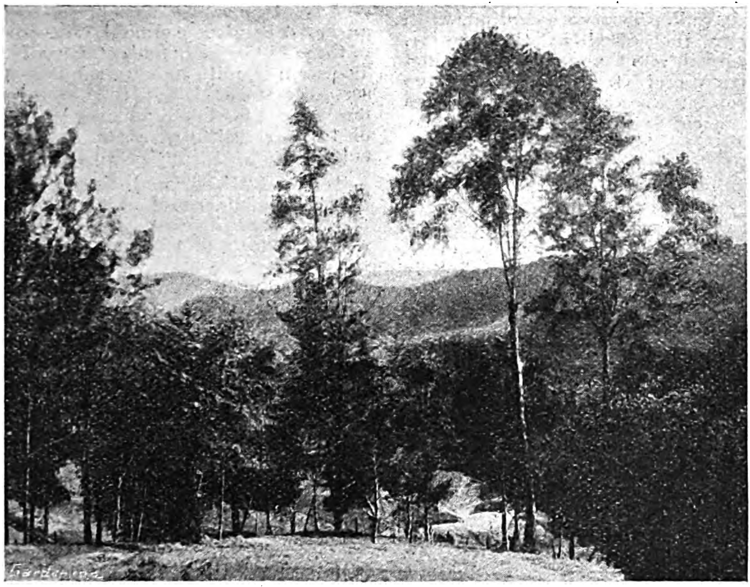


FIG. 83.—A HILL STATION IN ASSAM.
The trees are alien—Grevillea robusta and Coniferae.

The next Rhododendron met with on the ridge looked very much like R. bullatum, but it was nearly all over; eventually I found one plant in bloom, with very fragrant, white flowers, although the leaves of the 'Edgeworthii' and 'Maddeni' series are so different, woolly in the former, lepidote in the latter, the flower structure is very similar in both, and the series are undoubtedly very closely allied.

Inside the forest, R. arboreum was flowering in lurid splendour, and not many days later the 'Stamineum' broke into a yeast of white foam. This last, which recalls R. Mackenzianum, (although that has pinkish flowers) is disappointing. As a forest tree it is gawky, and the queerly shaped flowers, for all their elegant purity and dainty fragrance, fall too soon; the trusses, too, are meagre. Even so, viewed from the outside, across a glen, it shows up as a fine dome of soft blossom. But it is undoubtedly at its worst in the forest, as are all its kith and kin; the pinched flowers, in floppy trusses, the whorled leaves of an everyday shape crowded at the ends of the bare branches, and the torn, papery bark, [all help to give it an 'anyhow' look. Growing on a sunny or wind-swept ridge, however, the long, lean branches are telescoped, and the awkward, leggy-looking tree becomes a compact shrub with a firm contour; then, when a mantle of blossom surrounds the whole, with the scarlet of dead leaves and the purple plumes of the newly-born showing through, this 'Stamineum' takes on an entirely different and pleasing appearance. And that undoubtedly is the way to grow any 'Stamineum' whose characteristic peculiarities otherwise are its undoing. Unfortunately, as a family, they are soft, and even in a sheltered position cannot withstand the home climate; small chance then of their surviving under conditions which would keep them clipped and garnished! *F. Kingdon Ward.*

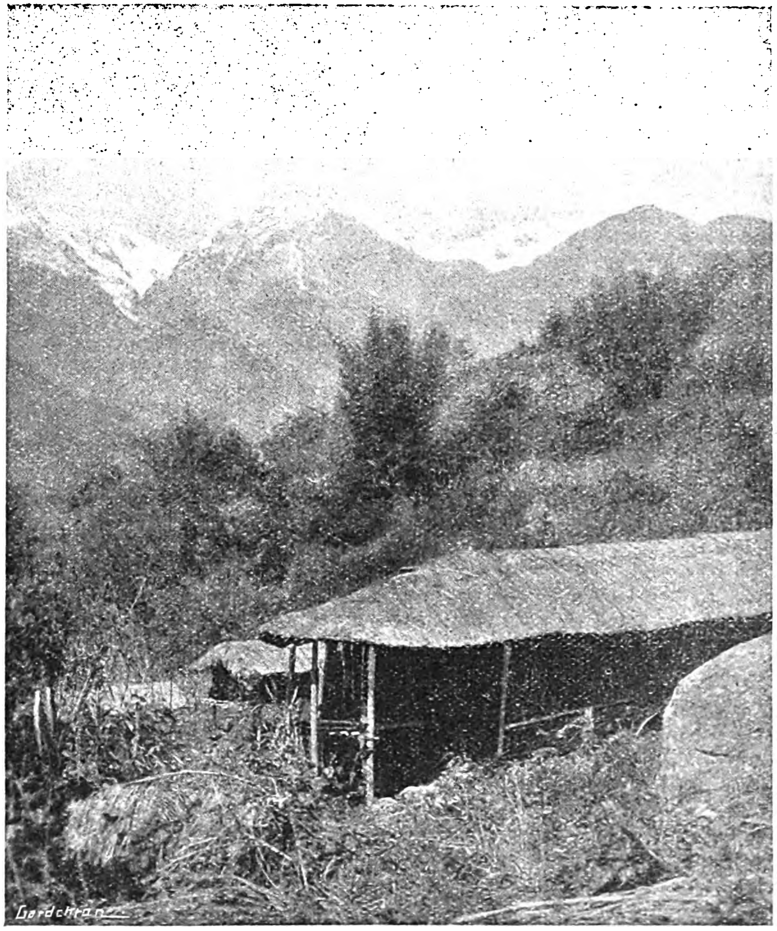


FIG. 84.—A MISHMI HUT IN THE DELEI VALLEY.
(Alt. 3,000 feet.)

NOTES FROM WISLEY.

In the matter of frost, Wisley rarely escapes lightly, whether in winter or late spring and in spite of its position it often experiences lower temperatures during cold spells than do much more northerly districts. During the recent period of exceptionally cold weather so many as 33° of frost were registered on the grass and well over 20° in the screen. The effect of this is naturally to be seen among the less hardy plants in the gardens, and considerable withering of foliage is noticeable in the case of Bamboos, and rather delicate shrubs, such as Abelia and Ceanothus. However, so far as can be seen at present, the mortality is by no means so high as might have been expected, and it is noteworthy that upon the Rhododendrons, including many somewhat tender species, the effect of the frost has been extremely slight. Among the Heaths, the flowers and foliage of certain large specimens of Erica lusitanica have been blighted, but the several good varieties of Erica carnea which are in bloom, such as E. c. gracilis and E. c. King George V, have been scarcely affected. Many varieties of E. mediterranea, one of the best of which is Brightness, are also flowering well. Many months must elapse before the flowering of the Lings, but Calluna vulgaris alba var. rigida gives a very good imitation of being in bloom, owing to the fact that it still retains its old flowers, the petals of which remain silvery-white and show up well against the fresh green foliage.

Snowdrops and Leucojums are still almost the only bulbs in flower in the wild garden, but shrubs such as Hamamelis mollis and the more vigorous H. japonica var. Zuccariniana help to make up for the general deficiency of bloom. The foliage of several Barberries has been damaged by frost, but that of Berberis concinna is still attractive although its leaves, which are crimson above, are beginning to fall and thus to show their white reverse. A few of the Oaks have retained their foliage, and among them Quercus coccinea, Knaphill variety, the leaves of which still betray a strong tinge of red, is outstanding.

Plants in the alpine house, which have been without heat throughout the cold spell, have in some cases suffered rather badly, and the blooms of Primulas in flower, such as Primula Forbesii and hybrids of Primula Juliae, have been withered, many flowers of the latter turning bright blue. The effect of the frost is also painfully visible in the case of plants of Haberlea, and even of Morisia hypogea, the flowers and foliage of which have been scorched. The early-flowering Saxifrages, however, have withstood the trying conditions conspicuously well, and the pretty, snow-white blooms of Saxifraga Burseriana tridentina are unblemished, while those of S. Burseriana major and S. B. minor are about to open. Kabschia Saxifrages which are also coming into flower include the charming little hybrid Perle Rose, with clear pink flowers, and the Cilician Saxifraga Kotschyii, with lemon-yellow blooms. In addition to Saxifrages, the pretty dwarf Thrift, Armeria caespitosa, which has been producing occasional blooms during the winter, is now commencing to flower a little more freely. The Crocuses in the frames outside the alpine house continue to bloom and among them the yellow flowers of Crocus minimus are noticeable.

In the heated greenhouses Lachenalias sent to Wisley for trial and comparison are in flower. Lachenalia pendula superba, with red flowers, is nearly over, while the yellow-flowered Arabia and Spa are not yet at their best. Varieties of this flower but recently received which show promise include Chaffinch and Brightness. In the same house the standard collection of Freesias should be in bloom very shortly and will afford means for comparing many new varieties. A Fuchsia trial is also in progress, but the plants will not be at their best until July or August. In an adjoining house is to be seen a trial of Dwarf Beans, which were sown in the middle of January, and which should be ready to pick at the end of March. Most of the fifty-eight varieties on trial appear very healthy and robust, particularly the variety Helmingham Early Prolific, which has very large leaflets. There is a noticeable tendency among some varieties, as, for instance, Ne Plus Ultra, to climb, in distinct contrast to the stocky habit of varieties, such as Osborne's Forcing.

One of the most important trials to be held in the open at Wisley this year is that of annual Asters, of which five hundred stocks have already been sent in. The number of sections or classes into which this flower is being divided by seedsmen is growing rapidly, and in some cases the total amounts already to thirty or forty. This trial may, perhaps, afford the means of determining whether the strains are sufficiently distinct to justify so many classes.

It may not be realised that some of the seeds raised at Wisley are grown in the laboratory itself, as, for example, those of the Chinese Primula Littoniana, with its mauve and scarlet flowers. Seeds of the latter are germinated on moist blotting paper kept in the light and at a temperature of 50° to 60°. After about a fortnight, the tiny seedlings are pricked out, with the aid of tweezers, into seed-pans. *J. E. Grant White.*

NOTES ON SOME BRITISH PLANTS.

MALVA SILVESTRIS VAR. VIOLASCENS.

MR. H. WHITLEY, of the Primley Botanic Nursery, Paignton, South Devon, collected, in Somerset, a Mallow which is being distributed in the horticultural trade as Malva "Primley Blue." Flowering specimens were received at Kew in October, 1928, and have not been exactly matched. There is no doubt that the plant is to be classified under the Linnean M. silvestris, but it does not exactly agree with any specimens at Kew, nor does it coincide with any of the described varieties, so far as can be ascertained. It is, therefore, described here as a new variety of the species.

M. silvestris, L., var. violascens, Turrill, var. nov. Planta perennis ad 1·2 *m. alta. Rami petiolique pilosi, pilis et simplicibus et stellatis instructi. Folia numerosa, laminis usque ad* 3-4 *cm. longis et* 4·5-6 *cm. latis, lobis usque ad* 1-1·5 *cm. longis et* 1·5-2·5 *cm. latis. Calyx* 9 *mm. longus. Petala circiter* 2 *cm. longa,* 1·4 *cm. lata, violascentia. Carpella glabra.*

The colour of the petals on the living plant was matched with Ridgeway's Dauphin's-violet (*Color Standards and Nomenclature*, 1912, Plate xxiii), and that of the veins of the petals with dark, dull, bluish-violet (Plate xxxvi).

GERANIUM ENDRESSII VAR. ARMITAGEAE.

In the *Journal of Botany*, lxvi, 44, 88 (1928), an account was given of G. Endressii, J. Gay, as it occurs in Cornwall. Two varieties, one with two forms, were recognised in the species, which, it was agreed, was taxonomically distinct from G. striatum and G. nodosum. I have since received specimens and living plants of a series of Geranía cultivated by Miss Armitage, Dadnor Garden, Herefordshire. An examination of these specimens enabled me to name all except two. Of these, one, on morphological grounds, was judged to be a hybrid between G. Endressii and G. striatum, and the other is considered to represent a new variety of G. Endressii. It is impossible to decide definitely if hybridisation has or has not been a cause of the origin of this variety, but the facts suggest gene mutation, perhaps induced by conditions of cultivation.

Geranium Endressii, J. Gay, var. Armitageae, Turrill, var. nov. Petala oblanceolata apice rotundata, obtusa, vel subacuta integra vel leviter crenulata, haud emarginata, 1·6-1·7 *cm. longa,* 4-4·5 *mm. lata* ; *stamina fertilia, antheris apiculatis.*

Cultivated by Miss E. Armitage, Dadnor Garden, Herefordshire. The petals in the living state are deep rosy pink.

LISTERA CORDATA, R. BR., IN HANTS.

In Townsend's *Flora of Hampshire*, ed. 2, 416 (1904), this species is recorded from "near Bournemouth," and from "Branksome woods." E. F. Linton, in his *Flora of Bournemouth*, p. 205 (1900), quoting the same localities, states : "The fact that this species, so unexpected in a county on the south coast, has been rediscovered 'near Bournemouth,' but on the Dorset side of the border, renders it very probable that the two discoveries represent only one station. It is much to be desired that the plant should be found in Hants., and there are suitable woody slopes about Bournemouth, Herne, etc., where it might be reasonably hoped for ; but until it has been so detected, it cannot now be claimed as a Hampshire plant."

It is therefore worth recording that a specimen of Listera cordata collected near Brockenhurst, Hants., June, 1927, by R. Findlay, has been received at Kew. The specimen is a small one and the flowers are in bud, but there is no doubt of its identity.

VIVIPARY IN DACTYLIS GLOMERATA, L.

Viviparous specimens of the common Cocksfoot are received at Kew from time to time. The majority show the development of vegetative shoots in the inflorescence, correlated with the growth of the glumes into green leaves. A specimen received through Mr. E. Thurston, however, is so extraordinary as to warrant record. It consists of the upper part of one plant and evidently represents a branched inflorescence with a subtending leaf. The lowest branch of the inflorescence consists entirely of vegetative shoots with fairly well developed green leaves. The second branch and the terminal part are dense aggregates of viviparous shoots from which grow out much reduced partial inflorescences on slender stalks. These partial inflorescences have normal glumes with perfect florets. The specimen was collected by W. Tresidder, at Pentewan, Cornwall, November 17, 1928.

In some localities, in some seasons, D. glomerata has two flowering periods—early summer and autumn. In late-flowering specimens, especially in wet autumns, some degree of vivipary is common. It is possible that the specimen here described was one whose late inflorescence-bearing stem became bent over and that proximity to damp soil stimulated vegetative growth which, however, did not entirely prevent the formation of partial inflorescences. *W. B., Turrill, D.Sc., Kew.*

THE SAFFLOWER.

THE Safflower (Carthamus tinctorius, L.), or Bastard Saffron, although so named after Meadow Saffron (Colchicum autumnale, L.), is in no way related to it botanically. It is a member of the Natural Order Compositae, and somewhat resembles a Thistle in appearance. A handsome annual, it attains to a height of three feet or more under favourable conditions. The stem is quite smooth, the leaves oblong and serrately prickled, and the flower-heads, which are rather more than an inch long, are made up of tubular florets of a brilliant orange to red colour.

Schweinfurth has distinguished a variety, inermis, which occurs in Egypt, differing from the type in having the lower leaves less spinulous, and in other minor characters. The flowers of the variety are stated to be frequently orange, red apparently being the normal colour for those of the type.

Carthamus tinctorius has been cultivated so extensively, not only in the east, but also in southern Europe, that it is difficult, if not impossible, to say exactly where it is native. In his *British Plant List*, Dr. Druce gives Abyssinia as the home of the plant, while some other authorities have described it as native to southern Asia. The plant has been cultivated in England, and is apparently easy to grow, the seeds being sown in the spring in a gentle bot-bed, and the plants afterwards transplanted; but very few, if any, are grown in England to-day. Occasionally, solitary specimens may be found growing on waste lands in a pseudo-wild state. Such plants are often stunted in their growth.

The plant is still widely cultivated in Asia and Egypt, and yields a number of products of economic importance. The most interesting of these is the red dye, carthamine, extracted from the flowers. The tinctorial powers of the plant have been recognised from very early times, and the plant, as a consequence, held in high esteem. The dye, indeed, is excellent in colour, although somewhat fugitive ; but its extraction is so difficult that, in Europe, at any rate, its use has been completely superseded by that of coal-tar dyes. Safflower-red, however, is still in big demand in the east, being used in Japan and elsewhere for the preparation of rouge, as well as for various other dyeing purposes.

As a matter of fact, the florets contain two colouring matters, a yellow one present up to about thirty per cent., together with the red one, carthamine, which occurs to the extent of only about 0·5 per cent.

To obtain the valuable red dye, the flowers have first to be thoroughly treated with water, perferably containing a little vinegar, to remove the yellow colouring matter. The residue is treated with a solution of washing soda, in which the red dye dissolves. Bleached cotton is then introduced into the solution and acetic acid (vinegar) added. This causes the whole of the dye to be deposited on the cotton, from which it is then extracted by means of a fresh solution of washing soda. It can be re-precipitated from this solution by means of a weak acid, such as tartaric acid, filtered off and further purified, or deposited direct on to chalk or talc in order to make rouge. Owing to their tinctorial properties, the florets have been used as an adulterant of Saffron.

The seeds of the Safflower are rich in an edible oil, and have been put to many uses. Not only are the seeds employed as poultry food, but they are also made into cakes for cattle, being pressed for this purpose either whole or after husking. The former type of cake contains a higher percentage of soluble carbohydrates than the latter, but a less proportion of albuminous compounds and a considerable amount of woody fibre. The cakes keep well, and cattle, which do not take to this dietary at first, are stated soon to become accustomed to it.

The oil may be obtained from the seeds by expression. In India, it is employed in the preparation of an oil used to preserve leather vessels, ropes, etc., from the rotting action of water. In Egypt a burning oil is stated to be obtained from Safflower seeds.

It is doubtful whether an attempt to re-introduce the cultivation of Safflower into England would prove beneficial from an economic point of view, but the rather unusual colour of the flowers renders the plant attractive, on which grounds, if on no other, it deserves to be better known. *H. Stanley Redgrove, B.Sc.*

NURSERY NOTES.

BICENTENARY OF MESSRS. DICKSONS AND CO., OF EDINBURGH.

The bicentenary of a Scottish seed and nursery firm is no ordinary event; in fact, there are but two firms in Scotland which have reached their second hundredth year: Messrs. Austin and McAslan, in the west, and Messrs. Dicksons and Co., of Edinburgh, in the eastern part of the country.

The Dickson firm originated at Hassendeanburn, near Hawick, in 1729, and soon after 1764 the business was transferred to Edinburgh. The founder of the firm was one Archibald Dickson, who was succeeded by his son, Robert Dickson, and the business remained in the hands of the Dickson family for well over a century. It is interesting to note that one member of the firm, Mr. Walter Dickson, was made a burgess and freeman of the burgh of Canongate in 1787, and that another member of it, Mr. Andrew Dickson, was appointed the treasurer of the Caledonian (now the Royal Caledonian) Horticultural Society when it was founded at Edinburgh in 1809, in which capacity he continued to act for well over twenty years. The joint-secretaries appointed at the same meeting were the distinguished Edinburgh horticulturist, Mr. (afterwards Dr.) Patrick Neill, of Canonmills House, and Mr. Walter Nicol. Another member of the Dickson firm, Mr. Thomas Dickson was elected as a Councillor of the Society at the same meeting, which was held in the Physicians' Hall, George Street, on the site of which the head office of the Commercial Bank of Scotland, Ltd., now stands.

When the Dickson business was transferred from Hassendeanburn to Edinburgh, a seed shop was opened at Shakespeare Square, which occupied the site of the present General Post Office, and large nurseries were commenced at Leith Walk, which then consisted for the most part of open fields, with isolated blocks of buildings at intervals. Here many of the leading Scottish gardeners of that time received part of their early training, and to 1, Waterloo Place, which was acquired by the firm as their business premises after the demolition of Shakespeare Square had been decided upon for the erection of the new post office, hundreds of young Scottish gardeners from all parts of the country gravitated on term days to find employment in the splendid gardens of the many beautiful mansions of Scotland, England and Ireland.

It is also interesting to note that the greatest of all Scottish authors of horticultural, agricultural and arboricultural literature, John Claudius Loudon, who was born at Cambuslang in 1783, and whose father was formerly a farmer in the neighbourhood of Edinburgh, spent some time as a pupil of the Dicksons at the Leith Walk Nurseries, where he carried out some of his horticultural experiments, before he removed to London, there to commence his wonderful career as a landscape gardener and author, in 1803. After occupying the nurseries at Leith Walk for over a century, in 1875 the proprietors of the ground, the Governors of George Heriot's Hospital, notified Messrs. Dicksons and Co. that they would resume possession of the land in that year, and this compelled the firm to find new ground for their nurseries, which they were fortunately able to procure in the vicinity from Mr. Balfour, of Pilrig.

In 1800, according to Grant's *Old and New Edinburgh*, proposals were made to convert the adjoining lands of Redbraes into a "Vauxhall," but the scheme fell through, and the ground was soon afterwards acquired by Messrs. Dicksons as nursery ground. The nurseries at Pilrig and Redbraes were carried on uninterruptedly for a number of years after 1875, but in 1891 the necessity for acquiring other ground arose through much of the Pilrig nursery being appropriated for railway extensions, and the firm decided to transfer their nursery to another site where disturbance of this nature would be much less likely to occur. In this year, therefore, a move was made to a new site on the lands of Craigmillar estate, on the southern boundary of the city, where about one hundred acres were obtained, and which now constitute one of the largest nurseries in the country. In 1922, having acquired much more commodious premises at 20, Charlotte Square, the firm vacated the shop and offices at 1, Waterloo Place, which had been their headquarters for over a century, and transferred to the former address, whence the whole of the seed and nursery business is now carried on.

There does not seem to be any record of when the last of the Dickson family ceased to be connected with the firm, but in the first half of last century Mr. James Alexander the elder, a native of Banffshire, became sole proprietor of it, and some time after this he was joined by two brothers, Messrs. James and William M. Welsh, and still later by his nephew, Mr. James W. Alexander, who died in 1890. Afterwards, Mr. W. H. Massie, who died in August last, was taken in as a partner, and in 1913, Mr. John Halliday Alexander, a son of the late Mr. James W. Alexander, entered the firm, and at present the two partners are Mr. J. H. Alexander and Mr. James Welsh, a son of the late Mr. W. M. Welsh.

Such is a short resumé of the history of one of the best known and most outstanding seed and nursery firms in Scotland.

THE NATIONAL IMPORTANCE OF FRUIT-GROWING.—I.

In a series of four short articles, written as a result of certain rather misleading views stated in the press, and, in particular, in a certain paper recently read before the Farmer's Club, it is proposed to indicate the present economic position of the fruit-growing industry in this country, considering first, the question of the internal demand for fruits; secondly, the possibility of increasing the supply; thirdly, the costs involved, and lastly, a general survey of the position.

While in no way wishing to discourage fruit-growers, or potential fruit-growers, it is only prudent to draw attention to such authoritative figures as are available. At the same time it should be noticed that the depression in agriculture which undoubtedly exists, is less in this than in any other European country, except Poland. The index figure for ordinary agricultural commodities in 1928 was 145, as against the figure for the cost of living, which was about 160. The figures for top fruits, such as the Apple, are similar to that for the standard of living; while those for soft fruits are, in many instances, greater. It is to be seen, therefore, that fruit growing, if depressed at all, is less so than ordinary agriculture, and that soft-fruit growing, so far from being depressed, is in a better position than top-fruit growing, and a considerably better one than ordinary agriculture.

In a paper read before the Farmers' Club on February 4, 1929 (see *The Gardeners' Chronicle*, February 16, p. 125, and February 23, p. 146), Mr. Seabrook stated: "The total consumption of fruit in England is put at £200,000,000" per annum. It seems that in this respect Mr. Seabrook must have been misinformed, since, in the *Report* of the Imperial Economic Committee, 1926, it is stated "the total imports for 1925 are £44,800,000." To this figure must be added the value of home produced fruits consumed in England, which, from the *Census of Production for England and Wales*, 1925, amounts to £9,720,000. If a further allowance of £3,000,000 be made for fruits produced in Ireland and Scotland, the total value of fruits consumed in this country is £57,520,000, and not £200,000,000, as Mr. Seabrook represents.

On examination of the figure of £44,800,000 given by the Imperial Economic Committee, it is found that £31,000,000 is accounted for by Oranges, Lemons, Grapes, dried Currants, Sultanas and other tropical fruits. Included in the balance is the sum of £5,000,000 for canned fruits, some of which cannot be replaced by home production, leaving £8,800,000 for Apples, some of which, when imported, are out-of-season fruits. If to this figure be added the value of fruits produced in England, Ireland and Scotland, the total value of hardy fruits consumed in this country is found to be £21,520,000. Of this total, it has been shown that of fruits capable of being produced in England, £12,720,000 worth is produced in the British Isles and £8,800,000 elsewhere. There would seem, therefore, to be, financially, a relatively small market to be captured by the English fruit-growers in spite of Mr. Seabrook's more optimistic implications. *A Norfolk Grower.*

(*To be continued.*)

THE GENUS PRIMULA.

(*Continued from p.* 143).

LEPTOPHYLLA (Craib). Spurge-leaved P.
(Petiolaris-Davidii.)

A perennial species with at hick, woody rootstock clothed at the base with numerous membranous, persistent scales. The thin, rigid leaves, in tufts, have oblong-elliptic, elliptic, oblong-egg-shaped, or egg-shaped blades, rounded at the tip and tapering to a wedge-shaped, winged stalk at the base, in all about five inches long; margins furnished with narrow, blunt teeth which are very minutely fringed; upper surface green, more or less smooth, underside covered with minute down. Flower stems one or two in number, three to six inches tall, bearing from five to nine blossoms, bluish-purple in colour, the shape and size of which does not seem to have been recorded. Flowers in May. Not in cultivation.

Grows in open situations on the Plateau of Tsetchoupa, in Yunnan, western China, at about 9,500 feet above sea-level.

Culture: As for other members of the section Petiolaris.

LEUCANTHA (Balf. f.). Milky-flowered P.
(Candelabra.)

A very beautiful Candelabra Primula, with a tuft of lance-shaped or oblong-oval, blunt leaves from six to nine inches long, gradually tapering to a scarcely distinct, winged stalk; margins undulate and furnished with small, hooked teeth; both surfaces the same tint and sprinkled with numerous minute, meal-producing, glandular hairs. Flower stem nine to sixteen inches tall, stout, coated with white meal towards the tip and bearing several superposed umbels of white, golden-eyed blossoms, on slender, spreading stalks about three-quarters-of-an-inch long. Corolla about three-quarters-of-an-inch long, with egg-shaped lobes; tube longer than the calyx. Flowers in June.

Grows in moist alpine pastures, on the mountains around Muli, in south-western Szechuan.

Culture: As for P. Beesiana, of which it is considered a sub-species.

LEUCOCHNOA (Hand.-Mazz.). White-stalked P.
(Nivales.)

A robust, perennial species, with a stout rootstock which produces a tuft of narrowly lance-shaped, pointed, fleshy leaves, four to eight inches long, with revolute margins and indistinct, broadly-winged stalks; upper surface more or less smooth, underside coated with white meal. Flower stems eight to fourteen inches tall, one to three in number, stout, bearing one or two superposed, many-flowered umbels of purple blossoms, on down-curved stalks, half- to one-and-a-half inch long, coated with white meal. Corolla flat, about three-quarters-of-an-inch across, divided into five broadly oval, blunt lobes fringed with minute, glandular hairs; tube more or less cylindrical, about three-quarters-of-an-inch long. Flowers in June and July.

Grows in decaying vegetation on the mountains of south-western Szechuan, at 10,000 to 11,000 feet above sea-level.

Culture: Rich fibrous loam, leaf-soil and powdered limestone, in a damp, shady spot, should suit it. *A. W. Darnell.*

(*To be continued.*)

HOME CORRESPONDENCE.

Gardeners' Pay and Status.—In the issue of *The Gardeners' Chronicle* for February 16 (p. 125), your correspondent, *H. B. O.*, states that had I been present at the Annual Dinner of the Professional Gardeners' Association, held at Leeds on February 2, I should have changed my opinion regarding the absence of an organisation worthy of the name to protect gardeners' interest. Since my note appeared in your columns, I have received a letter from the Secretary of the Professional Gardeners' Association, together with literature explaining the aims and objects of the Association. I gladly withdraw my previous statement, but venture to suggest that there are a great many gardeners who, like myself, had scarcely heard of the P.G.A., if at all, which fact stresses the need for the Association to advertise itself among gardeners. After perusing the literature, I feel sure that such an organisation would be welcomed and supported by both gardeners and employers, and no one will deny the need for it. Its object should be sufficient to guarantee the support of all interested in horticulture. In conclusion, I hope *B. C.* took the advice of Mr. Platton, and scanned the situations vacant columns, as some of the advertisements make one wonder if certain advertisers really expect to get a competent gardener at wages little better than those paid to labourers. *J. Batty, Tyn-y-Coed.*

Freesias from Seeds.—Your correspondent *G. B.* (p. 96), states that Freesias in their natural state are great lovers of moisture, and are often found growing on the bank of a running brook or stream. I presume *G. B.* has seen them growing thus in their native land. I have often wished to meet someone who knows Freesias in their native land, so that I could learn all about their climatic and soil conditions. I have always understood, however, that Freesias grow in a somewhat dry and hot part of the country, and that the natural water supply is rather uncertain. Their behaviour under cultivation rather points to this, and the conformation of the plants' growth below the soil rather leads me to believe that they are prepared to fight dry conditions. Under cultivation, I have never found them to require frequent watering—in fact, they are never watered unless the soil is really dry, and in the early stages of growth very careful watering is required. As to compost, I never use leaf-mould, and always think manure is best omitted, certainly in the case of young seedlings, which do not require feeding so early in life. Surely four seeds in a six-inch pot is not enough. I would certainly sow ten. I always find it better to under-pot rather than over-pot Freesias. *G. H. Dalrymple, Bartley.*

Woolly Aphis.—On p. 127 of *The Gardeners' Chronicle* for February 16, 1929, Mr. H. H. Cook, writing on the above pest and various remedial measures, states, "So far, I have not seen a painter's blow lamp advocated. Yet it is a most effective means of eradicating this pest above ground." I have been using this method for about fifteen years. I conducted a gardening class for several years at the Redditch Technical School, where I used to advocate this method and when I gave my lecture, "Aphides: their Habits, Customs and Natural Enemies," to the Fellows of the R.H.S. on July 27, 1920, I think I mentioned this method. I also advocated the use of creosote oil for spraying. As regards the blow lamp, in the hands of an intelligent person, I do not think there is anything better than this for destroying woolly aphis. I have used it many times, and also for canker wounds, and for mealy bug on the Grape vine during the dormant winter period. Aphides have been one of my "pet" subjects for observation and research for many years. *J. G. Blakey, Bromsgrove Road, Redditch.*

Notable Successes with Vegetables.—In the history of horticulture many remarkable exhibits have been recorded by well-known private growers, but it is doubtful whether there have been any results so outstanding as those achieved during the past year (1928) by the Hon. Vicary Gibbs, V.M.H., of Aldenham House, Elstree, Hertfordshire (gardener, Mr. E. Beckett, V.M.H.), in his several and varied displays of vegetables, exhibited at the great shows of the Royal Horticultural Society and at other exhibitions in the provinces. Briefly the more noteworthy exhibits were as follow:—CHELSEA, MAY 23—Royal Horticultural Society's Great Show: Collection of vegetables arranged on a space thirty-three feet by twelve feet. The R.H.S. Gold Medal was awarded for this exhibit (Fig. 86); also the Sherwood Cup for the best exhibit of any kind in the show, for this group. ELSTREE, JULY 21—Collection of vegetables arranged on a space thirty-three feet by twelve feet. Large Gold Medal and Silver Cup. SHREWSBURY, AUGUST 15—Collection of vegetables arranged on a space thirty-three feet by twelve feet. The President's Trophy, value thirty guineas, awarded for the finest exhibit selected from the non-competitive groups throughout the show. LONDON, OCTOBER 9—Royal Horticultural Society's meeting at the New Horticultural Hall. Collection of vegetables awarded the R.H.S. Gold Medal and the Congratulations of the Council of the R.H.S. This exhibit of vegetables also earned the Lawrence Gold Medal for the best exhibit of any kind staged at any of the Society's Shows during the year 1928. *D. B. C.*

Recalcitrant Gout-weed.—A patch of Gout-weed (Aegopodium) grows in the back lane just outside my garden wall. Year by year it increases, and is always a menace. Various steps have been taken to reduce it; year by year, the blossom is mowed off to prevent seeding. Once I ordered a digging attack; much was dug out and dealt with, but, incidentally, small bits of root were scattered to all points of the compass—result, an increased acreage, perhaps favoured by the cultivation. Having observed that the Mint patch was well nigh exterminated by the few falling droplets of "tar-distillate" winter wash applied to neighbouring Black Currants, this suggested a killing agent; some was watered on at double strength—the grass, the Dandelions, and the Nettles all went black, but the Gout-weed flourished as the proverbial "green Bay Tree." Next, the best part of an hundredweight of agricultural salt was spread over the patch, again the Gout-weed aped the Bay Tree. An experimental fruit tree wash was sent to me for trial; in the advertised dilution it killed even young wood of a Rose, reduced Apple buds to a parlous condition, and did some visible harm to Pear and Quince—evidently a potent agent, but, alas, a strong dilution did not convince the Gout-weed of its "mortal" nature. Next, partly with a view of reducing the nitrogenous content of the soil and so inducing some starvation, bleaching powder was thought of. A pound was dissolved in about a gallon of water; half-a-gallon of this was sprinkled freely on a small area, the can was filled up with water and another patch watered; again, the remaining half-gallon was diluted and a third patch treated. Once more the grass, Nettles, and Docks withered off, but not so the Gout-weed. Another failure was with one of the advertised weed-killers of non-poisonous habit; possibly the more efficient poisonous sorts might have a better effect, but one can hardly scatter such around on a public way. Meanwhile, "Floreat Aegopodium." *H. E. D.*

Black Currant Mite and Lime-sulphur.—Your correspondent, Mr. H. H. Cook (p. 95, February 9) does well to draw attention to the good resulting from spraying Black Currants with lime-sulphur, one in twelve, at the correct period. While at Lydney Park Gardens, I followed up this treatment for several seasons, repeating the spraying when rain washed away the lime-sulphur. In spite of adverse criticism, the bushes were decidedly cleaner and more healthy in every respect as a result of the spraying. *G. H. E., Taplow.*

Asparagus.—Mr. Staward's advice regarding the cultivation of Asparagus is sound, but anyone visiting the Evesham district and observing the method of growing this excellent vegetable in single rows, will find an object lesson in good culture. Most of the growers, and they are legion, sow their own seeds and transplant as and when the natural difficulties of soil permit. They have established a reputation for high-class produce. *G. H. Emmett.*

Partial Soil Sterilisation.—Practical growers have to adapt themselves to the various conditions that arise. Mr. Falconer's method of soil sterilisation is a thoroughly practical one and capable of dealing with quantities of soil, but surely it is better to be prepared with clean soil rather than be up against the loss of a crop of Cucumbers, such as a large grower experienced last year.—*G. H. E.*

VEGETABLE GARDEN.

CULTURE OF BRUSSELS SPROUTS.

I WAS very interested in the article on the Culture of Brussels Sprouts in your issue for February 2 (p. 87). It is still a debated point as to which are most appreciated—large, or medium-sized sprouts. Some few years ago everyone preferred the medium-sized "buttons," and October was usually considered quite early enough to begin picking. Now, I find, the end of August is not too early, and that large sprouts are most in demand. I am enclosing two specimens of each of two varieties which are grown extensively here in the Evesham district. I have been unsuccessful in discovering their names, so will class them as No. 1 and No. 2. No. 1 is an early sort. I have grown it with great success in a private garden, and its "buttons" were much appreciated when cooked. As will be seen, No. 1 has been very severely injured by frost, and in this district there are thousands of this type of Brussels Sprouts spoiling owing to lack of demand and over production. Picking was abandoned, and then frosts, followed by much rain in October, ruined the crops. It is indeed pitiful to see acres of Brussels Sprouts in this condition. The sprouts are the largest I have ever seen, and before being spoilt by frost were as firm as one could wish. No. 2 you will see, is still in prime condition, and will, I am sure, take the place of the early variety in the future. I suggest enough of the No. 1 variety should only be grown for picking from the end of August until October, to be followed by the later sort. No one can be surprised that large sprouts command the best market; they certainly look better in the shops, and there is less waste; they cook a good colour and are of excellent flavour. There has been a great increase in the culture of Brussels Sprouts during recent years. I know of firms who annually devote from twenty to one hundred or more acres to this crop. This season prices have ranged from 10s. per pot of 40 lbs. to 2s. 6d. per pot, but I should put the average at 4s. 6d., at which figure, of course, it is a paying proposition. The culture of Brussels Sprouts is one which requires skill. Good sturdy plants should be planted out three feet apart each way on land which has been well manured, ploughed or deeply dug, and made firm by rolling, especially in the case of light soils. About the middle of June, when the plants are making free growth, a good dressing of nitrate of soda should be given and the soil stirred, but not too deeply, as Brussels Sprouts are surface rooting. About the first week in August the centres of the tops of the plants should be pinched out; this, of course, checks the growth of the plants and encourages the buttons to form and swell more evenly. This method, of course, should not be practised in private gardens, where a continual supply of "buttons" is required from September until March. *James Page.*

[The specimens of Brussels Sprouts which Mr. Page sent us fully confirmed his remarks with regard to their size and firmness; the largest "button" of variety No. 1 measured four-and-a-half inches deep and three-and-a-half inches through, while No. 2 was two-and-a-half inches wide and deep.—Eds.]

RHUBARB.

It has often occurred to me that little use is made of the space under greenhouse stages. The accompanying photograph (Fig. 85) will illustrate one of the many uses to which such valuable space may be put. In these gardens every available foot of room in glasshouses is always occupied, as will be gathered from the illustration, which shows pots on the pathway in which Dwarf Beans are sown; so soon as these are germinated the pots are stood on the stages, and another lot takes their place. While I deprecate the crowding of plants, I am of opinion that the cost of running glasshouses warrants every care being taken to get the most out of them; by forethought and judicious management it is really surprising how successions of plants or crops may follow one another, with the houses always full and paying a handsome profit.

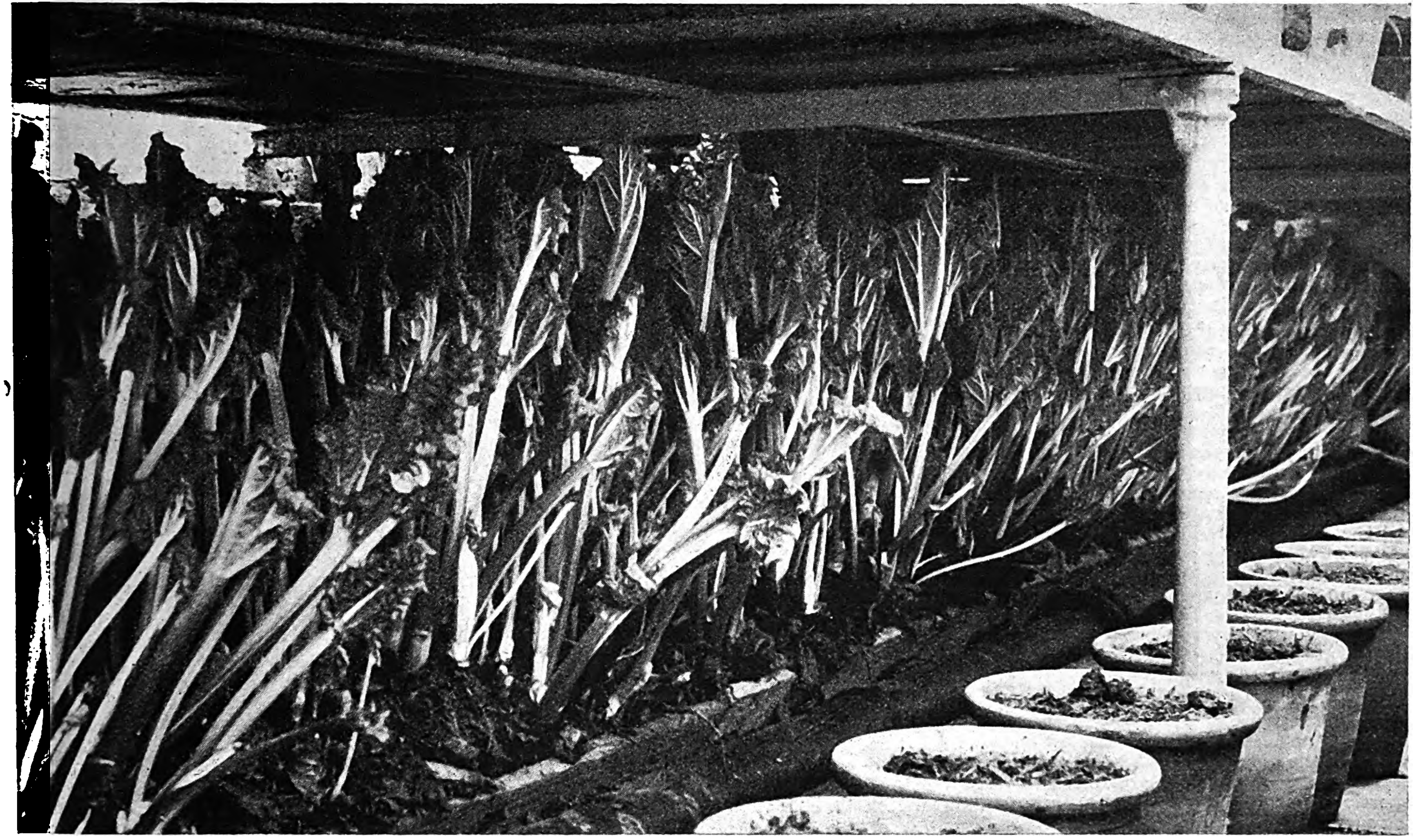


FIG. 85.—RHUBARB UNDER A GREENHOUSE STAGE.

Given available space under stages, Rhubarb may be provided from the end of November until the crop is ready to be pulled outside. This Rhubarb is far superior in quality to that grown in the open, provided no manure is used in the forcing, as this imparts a peculiar flavour which is quite objectionable. Half-decayed leaves, packed well around the roots and well-watered, are all that is necessary to provide the crowns with suitable moisture.

Most garden soils will suit Rhubarb, and during the present month strong roots should be cut up into sets and planted one yard apart each way, in land that has been well prepared. To prevent waste of room, Broad Beans may be sown between the sets at the time of planting and these will in no way interfere with the Rhubarb and the necessary cultivation. While good crowns may be produced in two years, I recommend a three-year system, and as really good crowns are desirable for forcing, no pulling from these crowns should be allowed, or they will be weakened. In my opinion this method of growing Rhubarb to be lifted for forcing is better than covering a patch with pots, boxes, or other material, as the time taken in the recovery of the crowns after they have been weakened, does not compensate for the trouble.

I know of no other crop which is more profitable than Rhubarb for forcing, nor one which will put the ground into better condition; especially is it useful where the dreaded finger-and-toe disease of Brassicas is prevalent, as the three years' rest from such crops usually starves out the disease.

Rhubarb for early forcing must have a period of rest, and this is best secured by lifting the roots in late autumn and exposing them to the elements; the more frost there is, the better.

The varieties Early Albert, Linnaeus, and The Sutton are especially useful for forcing, the last being of such excellent colour and quality that I assume it will be more largely grown when better known. *Allan Falconer, The Gardens, Cheadle Royal Hospital.*

CELERY.

The Celery—Apium graveolens—is a highly prized salad and delicious vegetable, and possesses also considerable medicinal properties, its action being carminative and diuretic. It is also used as a flavouring and tonic in combination with other drugs, such as Coca, Kola, etc., and is recommended as an excellent antidote to rheumatism.

A biennial, native of Europe, including Britain, it is one of our oldest cultivated plants, and its quality depends largely on good cultivation. A light, rich soil is best adapted for its growth, as, although a water-loving plant, it is apt to rot in winter on cold, retentive soils. Like many other biennials, anything in the nature of a check tends to force the plants into premature flowering, therefore, to produce solid stems and hearts it is important that the plants should be kept growing steadily from the germination of the seeds onwards. Too early sowing should thus be avoided, for if it is found impossible to plant the seedlings out when of suitable size, the consequent check at an important stage of growth may result in bolting.

For very early supplies, a small sowing may be made in February, but for the maincrop, early March is soon enough, and this should be made in a warm house or pit. So soon as the seedlings have formed the third leaf they should be pricked off into boxes of light, rich soil, and grown on under moist, warm conditions. When the leaves begin to meet they should be again transplanted, and at this stage no better conditions can be given them than a partially spent hot-bed covered with shallow frames and lights. So soon as established they should receive abundance of air, removing the lights entirely during the day, and finally when the weather is favourable, leaving the plants entirely exposed preparatory to planting out. A later sowing may be made about the middle of April, the seedlings being pricked out in a warm, open border, and finally planted out for late supplies.

The best Celery is generally grown in trenches, and the site having been selected, these should be prepared so early as possible in the spring. They should be heavily manured, and early preparation not only allows the soil and manure to consolidate, but also admits of the ridges being cropped with Lettuce, Spinach, and other quickly-maturing crops. If the trenches are about one foot in depth they will afford some protection to the young plants, and if advantage is taken of a showery day for transferring them with good balls of soil and roots, they will grow away quickly without check. Subsequent culture consists chiefly in keeping the surface soil stirred and free from weeds, the removal of side-shoots, the supply of abundance of water in dry weather and, finally, blanching.

Blanching may be effected by the use of paper bands, but is generally done by earthing, which should be carefully carried out in three stages. The plants should be allowed to grow as freely as possible for some time after planting, and when they have made sufficient growth for earthing to commence, the soil should not be pressed too firmly against the leaves on the first occasion. The object of earthing up is to exclude light, but care should be taken that soil is not forced inside the leaf-stalks; the centres should also be left quite free to allow the heart-leaves to push up and expand naturally, or deformed heads will result. At the final earthing up the soil should be made firm and smooth and sloped each side from the centre, so as to effectually throw off the rain and thus protect the hearts.

The action of alternate frost and thaw soon causes Celery to rot, and it is good practice to protect the ridges in severe weather. Thatched hurdles afford an excellent means of protection and may be removed easily in mild weather, but dry Bracken and long litter laid on the ridges to form a light covering is very frost-resistant and may likewise be used.

Among the enemies of Celery, slugs and snails may be dealt with easily, but great injury is frequently caused by the Celery fly, Acidia heraclei, if prompt steps are not taken to check its ravages. The eggs are laid on the upper sides of the leaves in April and hatch in a few days, when the larvae immediately pierce the tissues of the leaves and feed on their substance. There are several generations during the summer, each brood becoming naturally more numerous than the preceding, if not checked, hence every effort should be made to prevent the first flies from depositing their eggs. Sprinkling soot or lime on the leaves when the dew is on them helps to prevent the fly from depositing its eggs; very light sprayings with paraffin emulsion at intervals of ten days from the beginning of April onwards also act as a deterrent.

A parasitic fungus also attacks Celery and is particularly virulent in some seasons. As a preventive, the plants should be sprayed periodically with a solution of liver of sulphur in the proportion of 1 lb. to forty gallons of water, using a mist-forming sprayer. *W. A.*

GARDEN MANURES FOR MARCH.

All growers are aware that potash is a highly valuable artificial manure which often forms a governing factor in production, and the increasing consumption of potash salts in this country bears testimony to the fact that it can be employed profitably in modern, intensive cultivation. Under an older system of manuring, when farmyard manure was available in abundance, it was often considered that further supplies of potash were not necessary, but it should be borne in mind that the average farmyard manure only contains about 12 lbs. of potash per ton, therefore land that is heavily dressed with farmyard manure does not receive a very large amount of potash from this source.

Under present conditions, it is difficult to obtain adequate supplies of farmyard manure, but the various artificial manures offer a ready means of increasing the quantity of elemental plant food in the soil, and it is doubtful whether the potassic element is always sufficiently considered. Probably one reason for this is that it is generally considered that many soils, and clay soils in particular, contain potash in sufficient quantity for the needs of crops, but while the chemical analysis of soil may show an abundance of potash in a given soil, amounting even to several thousand pounds per acre in the first foot, the application of so small a quantity as one or two hundredweights of potash salts per acre frequently causes a substantial increase in crop. This can only be due to the fact that the potash in the soil in question is in such a state of combination with other soil constituents as to form compounds which will not dissolve in water at a sufficient rate to meet the needs of the plant. The plant can only utilise the potash which enters its substance by the root-hairs, therefore it must first be dissolved by the soil-water, either alone, or assisted by the acid exudation of the roots. Hence, if only a very small proportion of the original potash in a soil is available for the immediate needs of the crop, the application of the same element, in a more or less soluble form, quickly meets these needs.

But it is on the light soils that the lack of potash is generally most marked, and when under conditions of intensive culture for the production of such garden crops as Potatos, Turnips, Beet, Carrots, Onions and Celery, the effect of potash shortage readily shows itself. The effect of potash starvation is frequently seen on such soils, particularly in Potatos, by the yellowing of the margins of the leaves, causing restricted growth and the reduction of the crop to a ver low level, and it not infrequently happens that a mixed fertiliser, offered as a Potato manure, contains too little potash to correct such conditions. In a home-made mixture, the potassic element may be increased at will to meet particular soil conditions, and whereas the generally recommended dressing of 1 cwt. of sulphate of ammonia, 1 cwt. of sulphate of potash and 2 cwts. of superphosphate may give excellent results on a moderately heavy soil, the addition of a further 1 cwt. of sulphate of potash may be necessary to obtain the most satisfactory results on a light soil that is known to be deficient in potash.

Potassic manures increase the formation of starch and sugars, and are, therefore, specially serviceable in the production of high quality Potatos and nutritious roots. They also tend to moderate the rank growth which is favoured in soils of high nitrogen content, and at the same time they neutralise the effect which nitrogenous manures have of delaying the ripening of a crop. Their effect on grass is to benefit the herbage as a whole, but they specially stimulate the Clovers and other Leguminous plants, and should thus be used with moderation on lawns. So far as fruits are concerned, potash is an important element both in the production of sugar and ripening of the crop, and it has been shown that a crop of Apples may be expected to carry away considerably more weight in potash than of phosphoric acid and nitrogen combined. It will thus be seen that an adequate supply of potash to orchard trees which have reached bearing age is of paramount importance; and the need is accentuated in orchards laid down to grass, for thorough tillage as an aid to the liberation of the dormant store of potash in the soil is no longer possible under such conditions, and the deficiency has to be made good.

Kainit is probably the cheapest form of potash, but it should always be applied in the autumn or early winter. It contains a large quantity of common salt and is especially valuable to such crops as Beet, Carrots, Turnips, Asparagus and Brassicas; for Potatos, it is much better to supply sulphate of potash in the spring when preparing the ground for planting. A dressing of 1 cwt. or 1½ cwt. of sulphate or muriate of potash per acre may with advantage be given to such crops as Globe Artichokes, Peas, Beans, Celery and Lettuce, either when sowing or planting, or during the early growing season, while plantations of Currants, Gooseberries and Raspberries, which have not been dressed with kainit, may also be given up to 2 cwts. per acre during the spring. *W. Auton.*

SOCIETIES.

ROYAL HORTICULTURAL.

February 26.—It being the occasion of the Annual General Meeting of the Royal Horticultural Society, this fortnightly meeting was held in the New Horticultural Hall. Considering the bitterly cold weather and snowfall, it was a much better show than might have been expected, and it included a pleasant variety of all possible kinds. Orchids were very well shown; the many plants of Cymbidium and Oncidium were especially effective. The Orchid Committee recommended two First Class Certificates and five Awards of Merit to novelties. It must be quite a long time since the Floral Committee found no novelty worthy of distinction, but on the present occasion neither section recommended an award. There were six novelties of fair merit before Section B, but only a nondescript greenhouse Cyclamen was submitted to Section A, and this was promptly and rightly rejected. The chief floral features in the hall were forced shrubs, alpines, Carnations, Roses and stove plants The exhibits of fruits and vegetables were more imposing than usual at this time of the year. The central collection of vegetables arranged so skilfully by Messrs. Sutton and Sons was exceedingly valuable, as also was the collection of Potatos from Messrs. Dobbie and Co., while the dishes of Apples illustrated the best sorts for late use. There were the usual pleasant paintings of garden scenes and flowers, and the beautiful transparencies by Messrs. Malby and Co. included several for use in *The Gardeners' Chronicle*.

Orchid Committee.

***Present*:** Mr. Frederick J. Hanbury (in the chair), Mr. Gurney Wilson (Hon. Sec.), Mr. Lionel de Rothschild, Mr. Stuart H. Low, Mr. John C. Cowan, Mr. T. W. Taylor, Mr. Fred. K. Sander, Mr. A. A. McBean, Mr. Charles H. Curtis, Mr. H. G. Alexander, Mr. Arthur Dye and Colonel Stephenson Clarke.

First Class Certificates.

Cymbidium Letty, Wyld Court var. (*C. Merlin* × *C. Gottianum*).—This has flowers of large size and wonderful substance, borne on an erect spike. The flowers are white with a suspicion of blush. The lip is blush with dark purple-brown markings and a yellow central line. Shown by Sir William Cooke, Bart. (gr. Mr. H. Butcher), Wylde Court, Hampstead-Norris, Newbury.

Laelio-Cattleya Sunbelle, Brockhurst var. (*L.-C. Serbia* × *C. Thora*).—A very fine hybrid with large blooms of fine form and colour. The wide, fringed petals are rosy-mauve, the sepals a trifle darker. The wide lip has a large, dull yellow area, with pinkish-mauve side lobes and a frilled, purplish-mauve apex. Shown by F. J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

Awards of Merit.

Cattleya Remy Chollet var. President (*C. Monarch* × *C. Trianae*).—This has large flowers, of which the plant bore two on one stem. The sepals and petals are soft mauve, the base of the lip is also mauve, but the broad apex is deep Tyrian-purple, with a mauve margin. The throat is deep yellow. Shown by Messrs. Sanders.

Cymbidium Morvyth, Exbury variety (*C. Redstart* × *C. Alexanderi*).—In this charming hybrid the flowers are of a lovely, soft rose-pink colouring with darker veins and shading. The lip has a horse-shoe-shaped, deep red mark on the apex. Shown by Lionel de Rothschild. Esq. (gr. Mr. B. Hills), Exbury, Southampton.

Odontioda Acis var. Radiant (*O. Royal Gem* × *O. Orion*).—A handsome and richly coloured hybrid with flowers of large size and good form. The sepals and petals are deep cardinal crimson, while the lip has a purplish apex and a golden crest. Shown by Messrs. Charlesworth and Co.

Odontoglossum Harold var. Distinction (*O. eximium* × *O. Jasper*).—A bright and distinct hybrid, with shapely flowers of rich, deep red colour, with fleckings of white, and a white, golden crested lip. Shown by Messrs. J. and A. McBEAN.

Cymbidium Rosanna (*C. Kittiwake* × *C. Alexanderi*).—Flowers of fine substance, milky-white and blush-tinted, some of the sepals having a pink line. Lip blush-pink, with numerous bright rose-purple dots at the apex. Shown by Messrs. H. G. ALEXANDER, LTD.

GROUPS.

Cymbidiums and the golden-lipped Oncidium splendidum were prominent features in the large group arranged by Messrs. SANDERS. Varieties of Cymbidium Vesta and C. Venus were particularly good, and there was a grand spike of C. President Wilson. Aerides cylindricum, the rare Aerido-Vanda Mundyi, Masdevallia civilis, Coelogyne graminifolia, Trias picta and Bulbophyllum mundulum were interesting Orchids associated with the bolder Phalaenopsis Schilleriana, Cattleya Tityus, C. Monarch, C. Remy Chollet, Brasso-Laelio-Cattleya Pink Pearl var. Sunrise and the brilliant Laelio-Cattleya Hypolita.

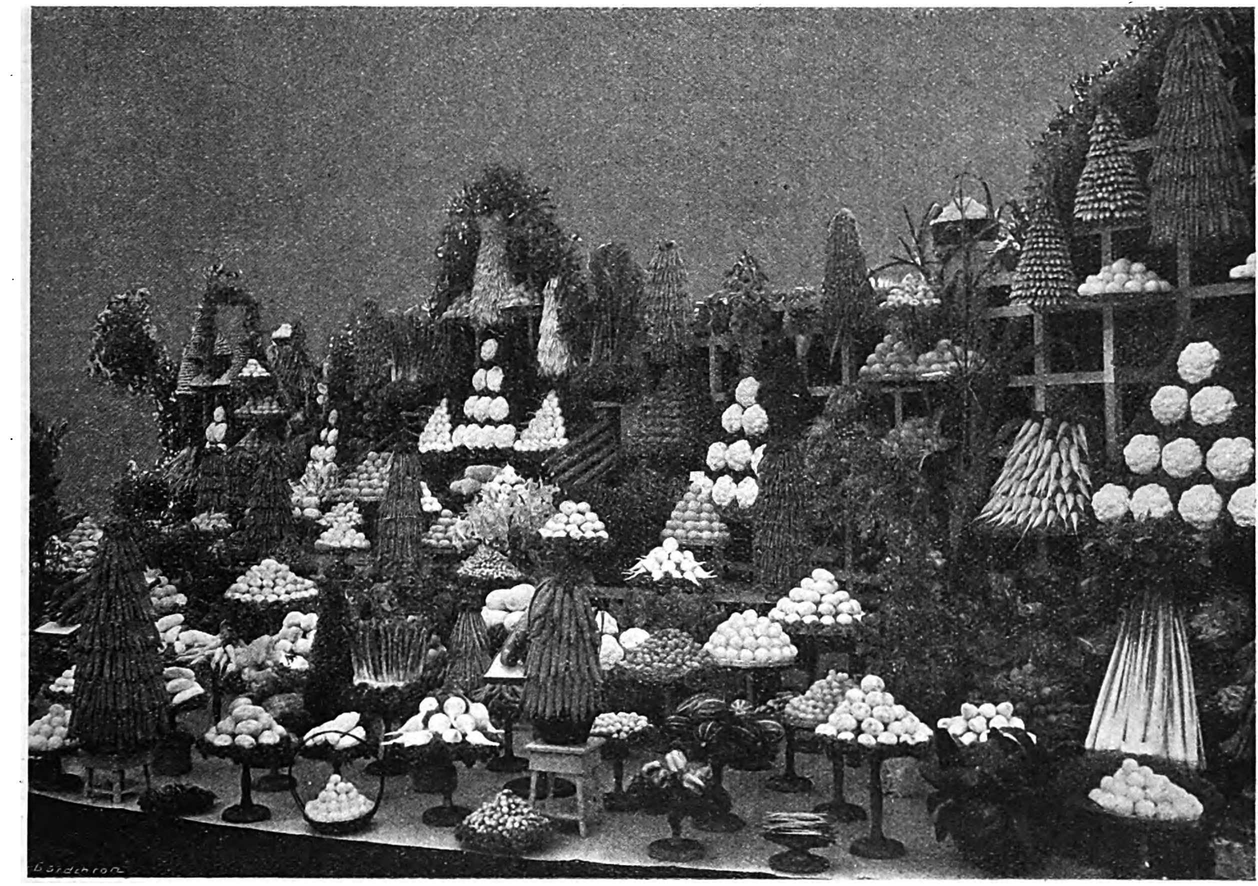


FIG. 86.—VEGETABLES EXHIBITED BY THE HON. VICARY GIBBS, V.M.H. (GR. MR. E. BECKETT, V.M.H.), AT CHELSEA SHOW, 1928. (see p. 166).

Messrs. H. G. ALEXANDER, LTD., contributed a group of finely-grown plants in which were two beautiful examples of Coelogyne Mooreana, Westonbirt variety, each carrying a pair of spikes of lovely white and yellow flowers. Other fine plants were of Cymbidium Lady Bird, C. Butterfly, C. Ruff, C. Mavis, Cypripedium Noel Hardy, C. Gnome, C. Lord Wolmer and C. Virgil, the last-named carrying three very attractive flowers.

Cymbidiums in great variety were shown by Messrs. J. AND A. McBEAN, a few of the more important sorts being C. Albania, C. Alexanderi, C. Swallow, C. Coningsbyanum and C. Pearl. Along the front of the group were charming plants of the little Oncidium cheirophorum, Epiphronitis Veitchii, and various Cypripediums, while in the body of the exhibit we noted good examples of Odontoglossum Rosina, O. Conqueror, O. Red Admiral, O. Phoebe, O. xanthinum, Laelio-Cattleya Hassellii var. alba, and the beautiful Cattleya Enid var. alba.

Messrs. COWAN AND Co. had a well arranged and pleasingly-furnished group, the Ferns and moss enhancing the beauty of the Orchids. Cymbidium Erica, C. Estelle and C. Coningsbyanum, and Oncidium splendidum, provided a good background for Brasso-Cattleya Apollo, Cattleya Clotho, Brasso-Laelio-Cattleya Hilary, several pretty Odontoglossums, Odontioda Metis, Cypripedium Alcibiades var. Illustris, C. Tom Worsley, C. Caractacus and C. Commodore.

A large group in which Odontoglossums were the leading feature, was arranged by Messrs. CHARLESWORTH AND Co. Among the many good things displayed we were especially attracted by Odontoglossum crispum, O. c. xanthotes, O. dalmatica, O. Omega, O. Toreador, O. Clydonia, and O. Blue Peter; and Odontioda Acis—very fine. Other attractive and interesting subjects were the rare Acacalli scynanea, with two flowers; Sophronitis grandiflora in fine form and colour; Oncidium Papilio, Odontonia Duchess of York and Potinara Juliettae var. Sultan.

Dendrobium chessingtonense and Laelio-Cattleya Penshurst, with their soft yellow colouring, were very attractive in the group shown by Messrs. STUART LOW AND Co. The display included Sophro-Cattleya Sistron, Lycaste Balliae, Laelio-Cattleya Eunice—of L. anceps parentage; the charming Odontoglossum Jeanette, betraying its descent from O. Rossii; O. Insleayi, Odontioda Queen Mary, Cattleya Tityus, Dendrobium Austinii, and the quaint old Pleurothallis Roezlii.

Mr. J. EVANS had a small group of Cymbidiums and Cypripediums, the latter including C. Memoria John Walker, C. Alcibiades var. Illustris, and C. Christopher var. Grand Duke Nicholas; Odontioda Queen Mary var. Radiant was also well shown in this group.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. R. B. Long, Mrs. Ethel M. Wightman, Mr. Arthur Turner, Mr. M. C. Allwood, Mr. J. M. Bridgeford, Mr. Donald Allan, Mr. W. B. Gingell, Mr. C. F. Langdon, Mr. R. Findlay, Mr. A. E. Vasey, Mr. James B. Riding, Mr. Charles E. Pearson, Mr. G. W. Leak, Mrs. Helen Lindsay Smith, Mr. Courtney Page, Mr. E. R. Janes and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. W. J. Bean, Mr. G. Reuthe, Mr. A. Bedford, Mr. T. Hay, Mr. Reginald Cory, Mr. W. B. Cranfield, Mr. F. G. Preston, Mr. Mark Fenwick, Mr. L. R. Russell, Mr. E. H. Wilding, Lady Beatrix Stanley, Mr. E. A. Bowles, Mr. G. Yeld, Mr. R. C. Notcutt, Sir William Lawrence, Bart., Mr. Hiatt C. Baker, Mr. Clarence Elliott, Mr. Charles T. Musgrave and Mr. N. K. Gould, Secretary.

GROUPS.

While the individual specimens of the trees and shrubs were not quite so large as at the two earlier shows, their increased floriferousness made them particularly attractive. Facing the entrance, Messrs. W. CUTBUSH AND SON arranged a very showy exhibit of Azaleas planted in a boldly disposed rock garden. The Azaleas included heavily-flowered bushes of the mollis and the rustica varieties. They also had good examples of Pieris polifolia and Prunus triloba fl. pl.

A number of interesting Chinese shrubs were associated with other sorts by Messrs. HILLIER AND SONS. In the centre of their group they had graceful Bamboos, and also showed good examples of Berberis japonica var. Bealei and Corylopsis pauciflora. Well-flowered bushes of Staphylea colchica, Erica lusitanica and other shrubs formed a good background to breadths of Primula Barrowby Gem, P. Wanda, P

Winteri and other early border flowers in the group of Messrs. J. Cheal and Sons. A particularly good specimen of Forsythia spectabilis occupied the centre of an attractive group arranged by Messrs. Waterer, Sons and Crisp, who also showed Rhododendron praecox, Muscari azureus, Anemone blanda rosea, Iris reticulata and other flowers. Spiraea Thunbergii and Prunus triloba fl. pl. were well shown by Messrs. Wm. Wood and Son, who used them as a background to batches of Anemone blanda rosea and such Saxifrages as S. Burseriana Cookside and S. b. tridentata. Messrs. Patricks again showed a good selection of dwarf Conifers suitable for the rock garden, and included well-flowered Ericas in variety.

As a background to a very showy planting of spring bulbs, Messrs. D. Stewart and Son placed Azalea Yedogawa, A. Hinodegiri and A. Betty. Their early Narcissi included N. Queen of Spain, N. triandrus albus and N. Orange Cup. Tulipa Kaufmanniana, Iris reticulata and Snowdrops were also freely shown. A low rock garden exhibit by Mr. K. Therkildsen was planted with Ericas, Primula Wanda and Saxifrages.

The end space of one of the tables was well filled by Messrs. Barr and Sons with a very spring-like grouping. Their early Narcissi included N. W. P. Milner, N. nanus, a good N. minor seedling, and a broad planting of N. Queen of Spain. The valuable, dwarf, early Irises were an important feature of this attractive exhibit, and these included the following varieties:—Princess, pumila alba, Seraphin, Naomi, Socrates and Cervantes. The Lye Green Nursery Co. had a neat rock garden exhibit planted with Ericas, erect little Conifers and Saxifrages.

An especially successful alpine exhibit was arranged by Messrs. M. Prichard and Son. The bold breadths of Saxifraga His Majesty, S. Mrs. G. Prichard and S. Riverslea were particularly attractive, while the bonny examples of Magnolia stellata and the patches of Anemone blanda rosea and Anemone fulgens added to the value of the exhibit. The Misses Hopkins had a small rock garden where they displayed Blue Primroses and early flowers.

Many well-coloured Codiaeums (Crotons) of useful size were used by Messrs. L. R. Russell, Ltd., in their attractive group of stove plants. They also displayed Dracaena Sanderi, D. Bausei, the old favourite Euphorbia jacquiniaeflora, Pandanus Veitchii and several Bromeliads. Mr. George Prince showed, in lovely branches of Fortune's Yellow and the Yellow Banksian, the first Roses of the year. The Misses Allen-Brown brought particularly good bunches of Princess of Wales Violets.

Several large bushes of Camellias and Mimosas (Acacias), with dwarfer plants of Ericas and Epacrises, were staged by Messrs. Stuart Low and Co. next to their Carnations, which latter included Thomas Ives, Topsy, Mrs. Ives, Eileen Low and Countess of Harewood. In their good collection of Carnations, Messrs. C. Engelmann, Ltd., included vases of the vividly coloured Spectrum, Mrs. A. J. Cobb and Topsy, and the bright pink Betty Lou and Mab. The rich yellow Wivelsfield Buttercup and Maine Sunshine were prominent in the collection of Messrs. Allwood Bros., who also showed the bright orange Maud Allwood, with many other varieties.

On the dais were set out the new plants and these included Leucocoryne ixioides odorata, the fragrant blue and white Liliaceous plant collected by Mr. Clarence Elliott in Chile last year and now shown by Lionel de Rothschild, Esq., Exbury, Hampshire; and Fritillaria karadaghensis, a species from N. Persia shown by Messrs. Wallace and Co., and presented to the Royal Gardens, Kew. It is an uncommon little species. The stems are about nine inches in height and furnished with alternate, glaucous leaves. The rounded flowers are of reddish-bronze colour on the outsides and spotted with crimson, with yellow apices in the interior. Rhodothamnus Solanderi, shown by Sir William Lawrence, Bart., is a bushy little New Zealand shrub bearing ovate, deeply serrate leaves and orange-coloured, tubular flowers. R. Barclay Fox, Esq. (gr. Mr. S. Smith), Penjerrick, Falmouth, staged good trusses of Rhododendron Liliani and sprays of Pieris japonica and Laurelia errata.

There was a large array of paintings at this meeting, among the numerous exhibitors being Miss Alice F. Wilkinson, Mrs. Henry Spencer, Miss Marion Broom, Miss E. Frances Drake, Miss Edith A. Andrews and Miss Winifred Walker. There were also several exhibits of garden designs, notably those of Messrs. Bakers, and Mr. Percy S. Cane, but the most interesting exhibit in the art section was undoubtedly that staged by Messrs. Reginald A. Malby and Co. This exhibit comprised a magnificent collection of photographic reproductions of gardens and flowers, together with many exquisite colour transparencies, and series of lantern slides, beautifully and naturally coloured and suitable for illustrating lectures on such subjects as alpine flowers, vegetables, fruits, English gardens, etc. The transparencies of the coloured plates which have appeared recently in *The Gardeners' Chronicle* attracted considerable attention, and assisted in making this exhibit one of extreme interest.

Narcissus and Tulip Committee.

Present: Mr. G. W. Leak (in the chair), Mr. W. Poupart, Maj. G. Churcher, Mr. Jan de Graaff, Mr. Peter R. Barr, Sir Daniel Hall, Miss E. Willmott, Mr. C. W. Needham, Mr. F. A. Secrett, Mr. Charles H. Curtis, Mr. W. B. Cranfield and Mr. A. Simmonds, Secretary.

There were no exhibits of novelties before the Committee at this meeting.

Group.

An attractive mixed collection of Tulips, Narcissi and Roman Hyacinths, growing in ornamental bowls, was set up by Messrs. R. H. Bath, Ltd. The Narcissi included such charming sorts as Brilliancy, Sunrise, Flame, and Orange Cup; among the trumpet Daffodils were The President, Golden Spur, King Alfred, Henry Irving and several unnamed seedlings. Tulips were represented by good examples of Vermilion Brilliant, Golden Queen, Mon. Tresor and Van der Neer, and Hyacinths by the varieties Grand Maitre, L'Innocence, Lady Derby, pink, and La Grandesse.

Fruit and Vegetable Committee.

Present: Mr. Jos. Cheal (in the chair), Mr. E. A. Bunyard, Mr. W. Poupart, Mr. E. Neal, Mr. W. F. Giles, Mr. Edwin Beckett, Mr. J. Basham, Mr. W. H. Divers, Mr. G. F. Tinley, Mr. P. D. Tuckett, Mr. J. Wilson and Mr. F. Jordan.

There were no novelties before this Committee.

Groups.

Occupying the centre position in the hall was a circular group of excellent vegetables and salads, staged by Messrs. Sutton and Sons. The exhibit was, as might be expected, arranged tastefully, while the quality of the produce shown, considering the inclement weather experienced of late, can only be described as magnificent. Potatos were represented by perfect tubers of many varieties, notably Golden Wonder, Red King, The Bishop, Express, Mr. Breese, Arran Comrade and Catriona, while the varieties of Broccoli staged were Sutton's Winter Mammoth, Early Roscoff and Superb Early White. There were Carrots, both long- and stump-rooted, in several varieties; Leeks, Parsnips—the roots of the variety Tender and True and Sutton's Student being exceptionally good; Onions, in such varieties as Selected Ailsa Craig, Sutton's A.1., Veitch's Main Crop, Sutton's Long Keeping, Brown Globe and Reading; and Beetroots, Seakale, Turnips, Brussels Sprouts, Celery, dwarf French Beans and Jerusalem Artichokes, most of them in several varieties. Witloof Chicory was well shown, and there were excellent baskets of Mustard and Cress, while other salads included Salad Potatos, Radishes in several types, Batavian Endive, Stachys tuberifera and Cabbage Lettuce. Ornamental Gourds, Asparagus, Rhubarb, Mushrooms and Fennel were also included in this grand exhibit.

Potatos in many sorts were staged by Messrs. Dobbie and Co., Ltd. Among early varieties were Witch Hill, Di Vernon, Mr. Breese and The Cardinal; early maincrop varieties were represented by King Edward, The Ally, Majestic, Arran Consul, Doon Star, Catriona, Great Scot and others; and maincrop Potatos by Golden Wonder, Field-Marshal, Incomer, Mauve Queen and Kerr's Pink. The Bishop was shown as a late variety.

Apples were exhibited, in about fifteen varieties, by Messrs. George Bunyard and Co. Ltd. The fruits were in excellent condition, among the sorts which made special appeal being Newton Wonder, Bramley's Seedling, Lord Hindlip, Claygate Pearmain, Allen's Everlasting, Upton Pyne, Orleans Reinette, Cox's Orange Pippin, Belle de Boskoop and Sanspareil.

Messrs. T. Rivers and Son, Ltd., were represented by a splendid collection of Citruses, the majority of the specimen trees shown being heavily laden with fruits. There was a grand tree of the St. Michael's Egg Orange in the centre of the exhibit, other Oranges represented being Mrs. Markham, Long Orange, Bittencourt, Nonpareil, and Thomson's Improved Navel. There were also well-fruited specimens of Citrus corniculata, the Myrtle-leaved Orange, Citrus medica, Bijou Lemon, Imperial Lemon and the Variegated Orange.

Annual Meeting.

The Annual Meeting of the Fellows of this Society was held in the Lecture Room of the New Hall, at 3 p.m. There was a good attendance, some two hundred Fellows being present, presided over by Mr. G. W. E. Loder, the President of the Society.

Following upon the reading of the notice convening the meeting, the Chairman expressed the thankfulness of all the members of the Society on the progress made by His Majesty, The King, in his recovery from a long and severe illness, and spoke of their appreciation of the Queen's care and devotion to His Majesty throughout. He then moved the proposal that the regret and deep sorrow of the Fellows, in the death of their late President, Lord Lambourne, be placed on record, and that their sincere sympathy be tendered to Mr. Robert Lockwood and other members of his family. This was passed in silence, the Fellows standing.

The minutes of the last Annual Meeting were passed, and Mr. Loder then reviewed the Report of the Council for the past year. He specially emphasised the fact that the cost of building the New Hall had been met by the funds of the Society, and also laid stress upon the necessity of repairing and partly reconstructing the old hall, with a view to enlarging the accommodation for the office staff and library. He pointed out that since 1904, to the present time, the number of Fellows had increased from 8,500 Fellows to 26,500, and that, consequently, the work of administration had increased enormously and had outgrown its present accommodation. Several schemes have been put forward to deal with this pressing need, the proposal favoured being that of building an additional floor for the library and converting the present library into offices, and to reconstruct the basement on modern lines. The total cost of this work is estimated at from £16,000 to £17,000.

Mr. Musgrave, The Treasurer, in presenting the Statement of Accounts, pointed out that the financial position of the Society was quite sound and very satisfactory. He hoped that, in a few years, the reserve fund, which had been used to meet the cost of the New Hall, would again be instituted. The Report and Statement of Accounts were adopted without comment.

The next business before the meeting was the election of a President. Mr. Musgrave proposed that Mr. G. W. E. Loder, who was appointed President of the Society on the death of Lord Lambourne, by the Council, be elected, a proposal which met with the hearty approval of all the members present. Mr. Loder thanked the members for the honour thus conferred upon him, and promised them his whole-hearted interest in the welfare of the Society. He then proposed that Mr. Musgrave be re-elected Treasurer; this was carried unanimously. Mr. E. A. Bunyard, Dr. A. W. Hill, and the Hon. H. D.

McLaren were elected to the Council; the numerous Vice-Presidents were re-elected *en bloc*, and Mr. A. C. Harper was appointed Auditor.

Following upon the election of officers, the presentation of the various cups and medals won during the past year was made by Mr. Loder.

The meeting terminated with a vote of thanks to the President, proposed by Mr. F. J. Hanbury, seconded by Mr. Jos. Cheal, and supported by Mr. R. W. Wallace, who stated that the Society was extremely fortunate in securing Mr. G. W. E. Loder as its President, a statement heartily endorsed by all the Fellows present.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL.

MR. ISAAC FLEMING, Curator of Parks, Paisley, presided over a largely attended meeting of members on Wednesday, Feb. 13, when Mr. Hugh MacSkimming, Auchenault Gardens, Edinburgh, delivered a lecture on "Late-flowering Chrysanthemums."

In regard to the propagation of new stocks, he said that for the greater bulk of late varieties it was best to have the cuttings rooted in the early part of the year, but those which had to be stopped in March required to have the cuttings taken so early as possible, because it was a bad practice to root a cutting in February or March and then stop it. To maintain the vitality of the stock, cuttings should only be taken from plants that had shown satisfactory growth and had produced good flowers, for no amount of good cultivation could make up for inherited weakness. Only root cuttings should be taken, and these should not exceed three inches in length. By planting an inch deep and thereby keeping the base of the cutting near the surface, quicker rooting was obtained.

After discussing composts and the work of potting on, the lecturer dealt at some length with the subject of manures. Bone-meal, he considered to be the most over-rated fertiliser on the market, and it was absolutely of no use for annual or pot plants that had to make their growth in a month or two. He began the feeding of his plants when they were in three-inch pots and continued the treatment during the growing season. To build up the frame of the plant, he prescribed a solution of sulphate of potash, one part, and soot three parts, applied two or three times a week. Sulphate of ammonia and nitrate of soda were excluded from the treatment. Potash was more expensive, but a little went a long way, and it was cheaper in the end. When the plants were in six-inch pots, an eye should be kept on their growth, and if the leaves were found to be closing together, it was advisable to apply a little nitrogen, which should be stopped whenever the buds appeared and there was sufficient of that element in the soil. If the plants are not heading, give them a little phosphate of potash, which acts like magic. Sometime in August the plants should be top-dressed, and by September 25, or earlier, according to the weather, they would require to be housed. His advice was, never feed Chrysanthemums after the leaves are fully developed. Over-feeding caused damping and distortion of the blooms. At Auchenault, six hundred large blooms are grown annually, but not a single petal was lost through damping, a testimony to the treatment of feeding the plants well in infancy and during the growing stages, but not when indoors.

The syringing of Chrysanthemums under glass should only be done in the early part of the year, and for the first week or two after they are housed in the autumn, should the weather be at all bright. At the latter period, the plants should receive all the ventilation possible, and immediately the buds begin to show colour syringing should be discontinued and temperature of 50° to 55° maintained to open the flowers.

Mr. MacSkimming afterwards explained the operation known as "taking the bud" by the aid of lantern illustrations, and at the close he was accorded a vote of thanks on the motion of Mr. Joseph Dobson.

READING GARDENERS'.

THE fortnightly meeting of this Association was held in the Abbey Hall, on February 4, when Mr. W. Broomfield presided over a large attendance of members.

The lecture for the evening was entitled, "The Best Hardy Plants of Recent Introduction, and the Best of the Older Hardy Plants," the lecturer being Mr. Thomas Carlile, of Lodden Nurseries, Twyford. He gave quite an educational review of the best hardy plants and the conditions most congenial to them; he pointed out that the gardener must discover, by his own experience or observation, the plants which are suited to his own particular district. The many families dealt with were numerous, those strongly recommended being Michaelmas Daisies, Campanulas, Chrysanthemum maximum, Delphiniums, Gaillardias, Heleniums, Lupins, Phloxes, Rudbeckias, Salvias, Scabious and Veronicas. An interesting discussion followed, at the close of which the lecturer received a hearty vote of thanks.

In the class for three dishes of Apples, three distinct varieties, there were six good entries and, notwithstanding the lateness of the season, some very fine fruits were shown. The first prize was awarded to Mr. A. H. Dow, The Gardens, Sulhamstead House; second, Mr. W. BROOMFIELD, The Gardens, Cliffe House, Mapledurham, and third, Mr. M. GODDARD, The Gardens, Bear Wood. In the class for single-handed gardeners, there was only one entry, Mr. A. W. EGGLETON, Redlands Road, Reading, being awarded the second prize.

In the non-competitive section, a remarkably fine collection of Apples, in fact, the finest that has been staged at these meetings, was shown by the authorities of the Reading University, represented by Mr. A. J. COBB, Head of the Horticultural Department. It consisted of no less than thirty-five distinct varieties, all of good colour and in splendid condition. It was awarded a First Class Certificate. Mr. C. J. HOWLETT, The Yews, Earley, showed seven dishes of Apples in distinct varieties.

THE next meeting of this Association was held in the Abbey Hall on February 18, and, notwithstanding the inclement weather, there was an excellent attendance. Mr. W. Broomfield presided.

A lecture entitled "The Propagation and Raising of Fruit Trees," was given by Mr. W. Martin, of Victoria Nurseries, Oxford Road, Reading. In his opening remarks, he stated that the subject he had selected was, to him, one of the most interesting branches in horticulture, and he would speak of his own practical experience, over many years, in this particular work. He described the various stocks and their uses, commencing with those for Apple, and illustrated by examples the methods and principles of grafting. Similar explanations were given with regard to Pears, Plums, Cherries, Peaches, Nectarines and Apricots. It was an extremely interesting lecture, full of valuable information to everyone interested in the subject, and it was followed by an animated discussion.

In the class for six spathes of Arum Lilies (Richardias) there were only two entries, the first prize going to Mr. A. MANLEY, The Gardens, Highfield, Heckfield; and the second to Mr. F. G. RABBETTS, The Gardens, Bulmersche, Earley.

In the non-competitive section, Mr. A. WEBB, School Road, Tilehurst, staged several dishes of Apples, the specimen fruits of Bramley's Seedling, Annie Elizabeth, Newton Wonder and Cox's Orange Pippin being of good colour and excellent condition for so late in the season.

MORAY AND NAIRN FORESTERS.

THE monthly meeting of the members of this Society was held in Elgin, the leading feature being a delightful address by Mr. F. Machray, forester, Dunphail, Morayshire, on contrasts in the various methods of forestry adopted in England and Scotland. To those of his listeners who have never had English forestry experience, the address proved highly interesting as Mr. Machray has a wide experience of forestry in the midlands and south of England, and is well acquainted with Scottish methods of forestry. Dealing chiefly with the hardwoods grown in the midlands and south of England, Mr. Machray lamented how the advance of forestry in these areas was retarded through game preservation, fox-hunting, etc., handicaps quite foreign to the Scottish forester.

A keen discussion followed the address, and on the proposal of Mr. A. Morrison, forester, Brodie, Mr. Machray was warmly thanked for his interesting lecture.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

MR. T. R. BUTLER presided at the monthly meeting of this Society, held at the R.H.S. Hall, on Monday, February 11. Thirteen new members were elected.

Two members over the age of seventy years withdrew the sum of £117 7s. 8d. from their deposit accounts, and the sum of £158 18s. 4d. was passed for payment to the nominees of three deceased members. The sick pay for the month on the Ordinary side came to £137 9s. 5d., and on the State section to £102 8s. 2d.; maternity claims were £10 0s. 0d. The sum of £31 7s. 3d. was granted to eight members for dental and optical treatment, and fifteen other cases were considered.

The draft of the annual report was submitted and approved for the annual meeting on March 11.

LANARKSHIRE FRUIT GROWERS'.

MR. FORREST presided at the annual meeting of this Society, held in Glasgow. The Secretary detailed the work undertaken by the Committee during the past year. The question of railway freights and the checking of weights had been discussed with representatives of the railway company, and the matter was remitted back to the Committee for further consideration and adjustment. Reference was made to the part taken by members of the Association in connection with recent prosecutions under the Merchandise Marks Act, and satisfaction was expressed at the results achieved.

The following office-bearers were elected for 1929:—President, Mr. Forrest, Holehouse, Hazelbank; Vice-President, Mr. James Gilchrist, The Pleasance, Kirkfieldbank; and Secretary and Treasurer, Mr. John Lightbody, Lanark. The retiring members of Committee, Messrs. Alex. Prentice, Brookbank, Carluke, and William Graham, Byrewood, Hazelbank, were re-elected, and Mr. James Wison, Westport, Lanark, was appointed to the vacancy caused by the retirement of Mr. Minehead.

Obituary.

John Frisby.—The funeral took place at Ruskington, near Sleaford, on Friday, February 22, of Mr. John Frisby, who died during the previous week, at the age of eighty-seven. He had lived at Ruskington in retirement for twenty-six years, but led an active life, pursuing his hobby of horticulture, and his garden was the admiration of all passers-by. Mr. Frisby was the son of the late Mr. Charles Frisby, head gardener to Lord Chaplin, at Blankney Hall, where he gained his first experience in horticulture. After spending some time at Messrs. Veitch's well-known nurseries, he was appointed, while still in his early twenties, gardener at Hainton Hall, North Lincolnshire. Years ago, both Mr. Frisby and his father enjoyed a great reputation as judges at flower shows.

S. Segar.—We regret to announce the death of Mr. Samuel Segar, of Messrs. Wills and Segar South Kensington. For very many years Mr. Segar had been one of the leading London florists; he was highly esteemed and greatly liked.

THE LATEST TRADE MARKS.

THIS list of Trade Marks, of interest to readers, has been selected from the Official *Trade Marks Journal,* and is published by permission of the Controller of H.M. Stationery Office.

MORKAM.

495,834.—Illustration of a shield device and two Roses, a yacht and the word MORKAM. Cutlery and edge tools, all made at Morecambe. Souplex, Limited, 36, Claremont Road, Morecambe. January 16.

SEMESAN.

491,437.—Fungicides and seed disinfectants, all being goods in Class 2.—E. I. Du Pont De Nemours and Co., 1,007, Market Street, Wilmington, State of Delaware, United States of America. January 16.

SPRAKAR.

497,455.—Chemical substances used for agricultural and horticultural purposes.—John Gadd (Colour and Chemical Agencies), Limited, 126, Bishopsgate, London, E.C.2. January 9.

CLAUDEN.

496,931.—Chemical substances used for agricultural and horticultural purposes.—August Karreth, trading as Luitpold Werk Chimischpharmazuetische Fabrik (Luitpold-Werk), Zielstattstrasse 9, Munchen 25, Bavaria, Germany. January 2.

ANSWERS TO CORRESPONDENTS.

CREOSOTE FUMES AND "SCALDED" FOLIAGE.—*G. R. N.* The leaves of your Arums, Freesias and Potatos are suffering from "scald" following the use of creosote on the pipes of the house in which they were growing. The Potato foliage is free from any fungus organism. The Arum foliage bears hyphae of a saprophytic fungus only, while a few of the Freesia leaves show signs of mottling due to some organism at present unknown (vide *The Gardeners' Chronicle,* January 12, 1929, p. 37).

DEVONSHIRE APPLES.—*J. C.* The three Apples you mention, *i.e.*, Hermann's Pippin, Devonshire Queen and Hollow Core, as growing in Devonshire, are quite genuine varieties, although not grown very extensively at the present day. Hermann's Pippin has fruits of medium size, of round and irregular form, with a yellow skin tinged with green on the shaded side, and striped and mottled with dark crimson on the side exposed to the sun. The flesh is yellowish-white, tender and juicy. It is a Somerset Apple, of only ordinary quality and only suitable for cooking purposes, being in season from October to January. Devonshire Queen has medium-sized fruits, round and irregular in shape, bright yellow, striped and flushed scarlet. It is a culinary sort, in season during October. It is of inferior quality and hardly worthy of cultivation. It originated in Devonshire, and was known so long ago as 1820. Hollow Core has conical, irregular and ribbed fruits of medium size; they are smooth and shiny, pale green on the shaded side, flushed with pale red on the side exposed to the sun. This Apple is described as an excellent culinary sort, with a fine perfume; ripe in September. It is stated to be grown extensively in Berkshire, and was at one time popular for market purposes.

LARKSPURS FAILING.—*B. N.* The Larkspur plants appear to have been attacked by a species of fungus causing "foot rot" but only secondary agents (Sciara larvae and mites belonging to the Tyroglyphidae) were present in the diseased portions. The affected plants should be removed and burnt, and the soil subjected to sterilisation before it is used again.

Communications Received.—B. C.—S. A.—A. T. J.—G. A. E.—V. S.—A. J. T.—C. G.—C. H.—C. W. N.—T. B.,—A. G.—J. R.—B. B.—H. C.

MARKETS.

COVENT GARDEN, Tuesday, February 26, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Adiantum cuneatum, per doz. ...	10 0	12 0
—elegans ...	10 0	12 0
Aralia Sieboldii	8 0	9 0
Araucarias, per doz.	30 0	40 0
Asparagus plumosus ...	12 0	18 0
—Sprengeri ...	12 0	18 0
Aspidistras, green ...	16 0	60 0
Aspleniums, doz.	12 0	18 0
—32's	24 0	30 0
—nidus ...	12 0	15 0
Azaleas, 32's, each	5 0	7 0
—per doz. ...	48 0	60 0
—60's, per doz.	15 0	18 0
Cacti, per tray, 12's, 15's ...	5 0	7 0
Cinerarias, per doz.	21 0	24 0
Crotons, per doz.	30 0	45 0
Cyclamens, per doz.	24 0	36 0
Cyrtomiums ...	10 0	12 0
Daffodils, per doz.	12 0	15 0

	s. d.	s. d.
Erica gracilis, per doz. ...	24 0	30 0
— — 60's, per doz.	12 0	15 0
— nivalis, per doz.	24 0	36 0
— — 60's, per doz.	12 0	15 0
Hyacinths (3 bulbs), per doz.	21 0	24 0
— 60's (1 bulb), per doz. ...	8 0	9 0
Marguerites, white, per doz.	18 0	21 0
Nephrolepsis in variety ...	12 0	18 0
—32's	24 0	36 0
Palms, Kentia	30 0	48 0
—60's	15 0	18 0
Pteris in variety	10 0	15 0
—large, 60's ...	5 0	6 0
—small ...	4 0	5 0
—72's, per tray of 15 ...	2 6	3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	21 0	24 0
—cuneatum, per doz. bun. ...	15 0	16 0
Anemone, St. Brigid, per doz.	6 0	9 0
Arums (Richardias), per doz. blooms ...	9 0	10 0
Asparagus plumosus, per bun., long trails ...	2 6	3 0
—med. sprays	2 0	2 6
—short „ ...	1 0	1 6
—Sprengeri, bun. long sprays...	2 0	2 6
—med. „ ...	1 6	2 6
—short „ ...	1 0	1 3
Azaleas, white, per doz. bun.	9 0	10 0
Camellias, white, per doz. blooms	4 0	4 6
Carnations, per doz. blooms	3 6	5 0
Chrysanthemums—		
—white, per doz. bunches ...	60 0	72 0
—white, per doz. blooms ...	6 0	9 0
Croton leaves, per doz. ...	1 9	2 6
Daffodils, single, per doz. bun.	10 0	15 0
—King Alfred, per doz. bun.	18 0	24 0
—double, per doz. bun. ...	10 0	12 0
— Victoria, per doz. bun. ...	15 0	16 0
—Princeps, per doz. bun. ...	9 0	12 0
—Sir Watkin, per doz. bun.	10 0	15 0
Ferns, French, per doz. bun.	10 0	12 0
Forget-me-nots, per doz. bun.	12 0	15 0
Freesias, white, per doz. bun.	5 0	6 0
Heather, white, per doz. bun.	9 0	12 0
Iris tingitana, per doz. blms.	5 0	6 0
Lilac, white, per doz. sprays...	6 0	10 0
—mauve, per doz. sprays ...	6 0	9 0
Lilium longiflorum, long, per bun.	11 0	12 0
— — short, per doz. blooms	11 0	12 0
—speciosum rubrum, long, per doz. ...	5 6	6 0
— — — short, per doz. ...	4 6	5 0

	s. d.	s. d.
Lily-of-the-Valley, per doz. bun.	24 0	30 0
Myrtle, green, per doz. bun.	1 6	2 6
Narcissus, Soliel d'Or, per doz. bun.	6 0	8 0
—Elvira, per doz. bun.	15 0	18 0
—Grand Primo	10 0	12 0
—ornatus, per doz. bun. ...	9 0	12 0
Orchids, per doz.		
—Cattleyas ...	18 0	30 0
—Cypripediums	9 0	18 0
Prunus triloba, per bunch ...	4 0	5 0
Roses, per doz. blooms—		
—Columbia ...	12 0	18 0
—Richmond ...	6 0	9 0
—Yellow ...	8 0	12 0
Smilax, per doz. trails ...	4 6	5 0
Snowdrops, single, per doz. bun.	3 0	6 0
Tulips, per doz. bun—		
—white ...	24 0	36 0
—yellow ...	24 0	30 0
—red	18 0	27 0
—pink... ...	24 0	36 0
—terra-cotta ...	18 0	24 0
—mauve ...	24 0	30 0
—double varieties	24 0	36 0
—Darwin's, pink, per doz. bun.	36 0	42 0
— — red, per doz. bun. ...	36 0	42 0
Violets, Prince of Wales, per doz. bun.... ...	4 0	6 0
French Flowers—		
—Aacia (Mimosa), per doz. bun.	12 0	15 0
—Anemones, De Caen, per doz. bun. ...	21 0	24 0
—Marguerites, yellow, per doz. bun. ...	6 0	8 0
—Marigolds, per pad	9 0	12 0
—Narcissus—Paper White, per doz. bun.	7 0	8 0
—Ranunculus—double scarlet, per doz. bun.	12 0	15 0
— — carmine, per doz. bun.	12 0	15 0
—Violets, Parma, per large bun.	4 0	5 0

REMARKS.—Owing to the milder weather conditions the supplies from home-growers have shown some increase during the past week, notably Daffodils, Tulips, Narcissus ornatus and Carnations. A good selection of Tulips is now on sale, including more double varieties and some very fine Darwins. Small consignments of Narcissi from the Channel Islands, consisting of Grand Primo and White Pearl, have realised high prices owing to fewer French Paper White Narcissi being available. Few French blooms are expected this season owing to severe weather conditions. Liliums still realise high prices owing to short supplies; this also applies to single Violets, Freesias and Roses. Lily-of-the-Valley continues fairly plentiful and good in quality. All foliage is exceptionally scarce at the present time and insufficient to meet present requirements.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Extra Special	—	18 0
—Special ...	15 0	16 0
—Best	10 0	12 0
—American—		
—Newtown ...	13 0	14 0
—Albemarle Pippin, per barrel	30 0	34 0
—Nova Scotian—		
—Ben Davis ...	20 0	24 0
—Starks ...	22 0	24 0
—Golden Russet	30 0	34 0
—Ribston ...	35 0	40 0
Bananas, per bun.... ...	18 0	25 0
Dates, dry, in cartons ...	4 6	6 6
Grapes—		
—English—		
—Gros Colmar	3 3	4 6
—Belgian Colmar	2 6	3 0
—Cape—		
—Colmar ...	12 0	15 0
—Hermitage ...	6 0	7 0
—Waltham Cross	12 0	15 0
—Rosaki ...	15 0	17 6
—Red and white		
—Hanneport ...	—	15 0
—Molinera ...	10 0	12 0
Grape Fruits—		
—Jamaica ...	18 0	22 6
—Florida ...	25 0	27 0
—Honduras ...	20 0	22 6

	s. d.	s. d.
Lemons, per case—		
—Messina ...	11 0	27 6
Nectarines, Cape, per tray ...	4 0	6 0
Oranges—		
—Seville, per case	20 0	26 0
—Almeria, case	20 0	38 0
—Jaffa ...	25 0	26 0
—Denia ...	20 0	38 0
Peaches, South African, tray	5 0	12 0
Pears, Cape—		
—Clapp's ...	4 6	5 0
—Bon Chretien	4 0	5 0
—Beurre Hardy	—	4 0
—Beurre Bosc	6 0	8 0
—Californian—		
—Winter Nelis, ½-boxes ...	—	13 0
Pineapples, case	20 0	35 0
Plums, Cape—		
—October Purple	5 0	7 0
—Kelsey ...	6 0	10 0
—Satsuma ...	6 0	10 0
—Apple Plum	7 0	12 0

REMARKS.—Most sections of the market are feeling the absence of demand that usually accompanies severely cold weather. The department most materially affected is undoubtedly that handling Cape fruits. Quantities are heavy, but the Peaches, Pears, Plums and Grapes are meeting a demand that is anything but satisfactory. Hothouse Grapes are selling particularly well, probably due to some extent to the amount of illness which persists in the country, as well as to a shortage of supplies from Belgium. Apples from the North American continent, although in comparatively small supply, are quoted easier. Some really good English Bramley's Seedling from various cold stores are now available and selling quite well at a figure the producers will no doubt consider satisfactory.

Forced Beans from Guernsey and Worthing are rather more plentiful and making less money. Hothouse Potatos maintain fairly good prices and are inclined to sell better. A few hothouse Peas are arriving and sell well. Considering the cold weather, Mushrooms are comparatively plentiful, and prices are not so high as might be expected. Cucumbers are not selling well, and there is some congestion of supplies, which means lower values to clear. Forced Rhubarb is selling rather more freely, and price-levels are a shade higher. Asparagus, mainly from France, is selling well, and the small quantity available from Devonshire is also moving out satisfactorily. Salads from France are going out freely in spite of some proportion of frozen produce. Cauliflowers are a bright section, even at improved prices. Root crops are merely a steady trade, as also are green vegetables, in spite of some shortage. Supplies of Potatos are ample for the demand, and values are about the same.

GLASGOW

Some improvement was noticeable last week in the conditions of the cut flower market, and price movements, although limited, were generally in favour of producers. Tulip supplies were ample and the quality was better. Bartigon, William Pitt and Le Notre realised from 8d. to 1s. 6d. for 6's; William Copland, 8d. to 1s. 4d.; Couronne d'Or, 10d. to 1s. 3d.; Flamingo and Prosperity, 10d. to 1s. 2d.; Cardinal, 10d. to 1s.; and Murillo, Prince of Austria, Lucretia and Tea Rose, 9d. to 1s. Daffodil prices were irregular, King Alfred making 2s. per dozen; Emperor and Victoria, 10d. for 6's; Golden Spur, 10d. to 1s. 2d. for 12's; Sir Watkin, 1s.; Princeps, 10d.; and ornatus, 6d. to 9d. Exceptionally good Carnations were cheap at 2s. to 2s 6d. per dozen, but the blooms of Betty Lou were worth from 7s. to 8s. Richardias and Lilium longiflorum ranged from 10s. to 12s.; Madame Butterfly Roses advanced to 12s. 6d. per dozen; Freesias sold at 1s. per bunch; Anemones and Ranunculi, 2s.; Lilac 2s. to 3s.; Prunus, 2s. to 2s. 6d.; Mimosa, 12s. per cane; Narcissi, 20s. per cane; Stocks, 8s. per pad; and Lily-of-the-Valley, 2s. to 2s. 6d.

In the fruit market, Apples averaged 2s. per barrel and 1s. per case cheaper, while Orange prices were steady. Grape Fruits (Blue Goose brand) sold at 26s. per case; home-grown Grapes, 3s. 6d. to 5s. 6d. per lb.; Belgian, 2s. 6d.; and South African, 15s. to 16s. (9 lbs.); Cape Plums, 5s. to 6s. per box; and Peaches and Nectarines, 5s. to 8s.

Vegetables were scarce and dear, Cucumbers being priced at 33s. per dozen; Lettuce, 4s. to 5s.; Cauliflowers, 4s.; French Beans, 6s. to 7s. per box; Leeks, 1s. per bundle; Mushrooms, 2s. 6d. per lb.; and Rhubarb, 30s. to 40 per cwt.

THE
Gardeners' Chronicle
No. 2202.—*SATURDAY, MARCH* 9, 1929.

CONTENTS.

Alpine garden—
  Campanula Kolenatiana 178
  Sanguinaria canadensis 178
  Sedum primuloides 178
  Sideritis euboea ... 178
Atkinson, Mr. William V.M.H. 174
Bulb garden—
  Galanthus nivalis var. virescens ... 180
  Merendera caucasica 180
  Tricyrtis 180
Davidia involucrata ... 182
Edinburgh, notes from 184
Florists' flowers—
  Border Carnations... 184
Food Materials of Plants, transport of 173
Fruit garden—
  The manuring of fruit trees ... 190
  Black Currant Daniels' September ... 191
Fruit-growing, national importance of ... 190
Hardy flower border—
  Campanula lactiflora 180
Ideal Home gardens, the 187
Indoor plant—
  Calliandra haematocephala ... 180
Ludgvan Rectory ... 183
Omphalodes, the ... 178
Orchid notes and gleanings—
  Dendrobium delicatum 179
  Two new Cypripediums 179
Potash notes 186
Primula, the genus ... 185
Societies—
  Batley Paxton ... 191
  British Mycological 192
  Cardiff Gardeners'... 192
  Derbyshire Horticultural 191
  Guildford Gardeners' 192
Stoking, on 188
Trees and shrubs—
  Arbutus, propagation of 181
  Buddleia alternifolia 181
  Holboellia latifolia... 181
  Phylladoce coerulea 181
Vegetable garden—
  Cucumbers in frames 191
Week's work, the ... 176
Woodland garden—
  Trientalis europaea 180

ILLUSTRATIONS.

Arbutus cutting, a rooted 181
Atkinson, Mr. W., V.M.H. 174
Carter and Co.'s, Messrs. J., Old Mill Garden 187
Cyclamens at Dublin 189
Cymbidium Letty, Wyld Court var. 175
Davidia involucrata 182, 183
Dendrobium delicatum 179
Sanguinaria canadensis var. grandiflora 177

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41·3°.

ACTUAL TEMPERATURE—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, March 6, 10 a.m. Bar. 30·3. Temp. 43°. Weather, Fine.

The Transport of Food Materials by Plants.

THE green plant illustrates the thesis that clever people find it much more difficult to understand simple things than complicated things. Science has been puzzled to explain how the movements of food materials are regulated in green plants. It is, of course, known that the seat of manufacture is the green leaf, and that the materials manufactured consist of sugars and nitrogenous compounds. These materials, to be of use, must be transported to all parts of the plant, and what the scientist wishes to know is the tissue through which this movement takes place. There are two routes, either or both of which might serve. They are the wood and the bast. The woody system of plants, however, serves other purposes. It acts as the skeleton and forms the channel through which water and mineral substances obtained from the soil are brought to the leaves. In view of this latter function, it does not seem likely that it should also be engaged in a circular downward transportation of food from the leaves. There is, however, some evidence that such a circulatory movement does appear in the woody vessels, and it is quite certain that sugars are to be found in the sap exuding from those vessels. Nevertheless, recent investigations seem to point to the phloem or bast as being the highway along which the sugary sap produced in the leaves travels to its destination, which is to all—including the uttermost—parts of the plant. These investigations have been carried out very carefully by *Messrs. Mason and Maskell, and their main conclusions are summarised very thoroughly by Professor J. H. Priestly in *Nature*, for January 26, 1929. Messrs. Mason and Maskell have shown in a very convincing manner that the daily variation in concentration of sugars in the leaf, coincides with similar variation in the bark. This would seem to indicate that as production in the leaf increases during sunlight, so surplus sugar is carried away along the bast. The chief puzzle, however, remains, which is,—how does the sugar travel? The rate at which it passes from the leaf down the stem is so relatively high as to preclude its passage by diffusion. Calculation shows that the speed of movement is about 20,000 times faster than it would be were it to pass by diffusion. The young sieve tubes, which are the elements of bast by which sugar appears to travel, consist of protoplasm which would often seem to be in a highly agitated state, and which, of course, in its peregrination might carry with it sugar from the sieve tube above to the one below. Of course, the rate of movement of protoplasm is comparatively slow, but it is of the order of an inch or so an hour, and such a rate in so leisurely an institution as a plant might suffice to provide for the distribution of all manufactured materials of a leaf before the annual growing period comes to an end.

After the Frost—a Thaw.—We ask the consideration and patience of our readers in the case of nurserymen from whom they are expecting the delivery of trees, shrubs and herbaceous plants for late planting. The nurseryman has his difficulties, and the long continued period of severe frost has added to them, but every nurseryman fills his orders so soon as possible, for his own sake, so well as his customers. Stock is so retarded that, when the thaw is complete, there will be ample time for successful planting.

The Genus Tulipa.—The friends of the late Mr. W. R. Dykes are aware that, for some time before his untimely death, his interests had turned to the Tulip genus, and they will be glad to know that Mrs. Dykes has lately been engaged in gathering together her husband's notes and papers on the genus, with a view to their publication in collected form in the course of the ensuing summer. It is understood that Sir Daniel Hall has written a preface to the book.

The Genus Eucalyptus. — We have recently received Part 10, Vol. VII (Part LXX of the complete work) of *A Critical Revision of the the Genus Eucalyptus*, by the late Mr. J. H. Maiden, F.R.S., F.L.S. The Eucalypti dealt with in this issue are E. Baxteri and its variety pedicellata, E. Blaxlandi, E. agglomerata, E. orgadophila, E. acmenioides var. tenuipes, E. Murphyi, E. Stuartiana and E. angophoroides. In most instances a full description of the plant is given, together with its synonyms and range.

United Horticultural Benefit and Provident Society.—The Annual Meeting of this Society will be held at the Royal Horticultural Society's New Hall, Vincent Square, Westminster, at 7.30 p.m., on the 11th inst.

Parks and Botanic Gardens Superintendents.—At the next meeting of this Association, to be held in the Lecture Room of the Royal Horticultural Society's Hall, Vincent Square, Westminster, on Tuesday, March 12, Mr. R. Birch, of Messrs. James Carter and Co., Ltd., will deliver a lecture on "The Production and Maintenance of Grass for Public Parks." The chair will be taken by Mr. A. J. Ashmore (Chairman of the London Branch), at 7 p.m. prompt. This lecture should prove of interest to parks representatives and horticulturists in general, to whom a hearty invitation is extended.

Belgian Centenary Celebrations.—On February 27, a meeting took place at the Palais des Academies in Brussels to inagurate the commencement of active work in celebrating all over Belgium the centenary of her independence by means of intensive floral and horticultural production. "La Belgique Fleurie en 1930" is the slogan to be used to stimulate all classes of the population to show the visitors expected to attend the various exhibitions, etc., during the summer, a country of flowers and foliage. The official ceremony was organised by M. Albert Richir, President of the Provisional Executive Committee, and was graced by the presence of the Queen of the Belgians, attended by all the horticultural notabilities and a number of other distinguished persons. The Minister of Agriculture, M. Baels, was unfortunately absent owing to influenza, and more than two hundred letters and telegrams were received from other persons who were prevented from being present by the same reason. The Queen was welcomed and the proceedings opened by the Baron de Kerchove d'Exaerde, assisted by M. Richir and others, and several speeches were made, after which Committees were formed to take over the work of propaganda and organisation.

"The Gladiolus Annual."—All who are interested in the Gladiolus will welcome the 1929 edition of *The Gladiolus Annual*, the official organ of the British Gladiolus Society. It is a very creditable production, being well edited, well printed and freely illustrated; the coloured plates of single blooms of the varieties Paul Pfitzer, Mrs. van Konynenburg, and Phaenomen are exceptionally good. The one-hundred-and-twenty-three pages are packed with information, the articles of special interest being those dealing with Gladiolus species; Gladioli of Amercan origin; new Gladioli; and New Zealand Gladioli. The activities of the British Gladiolus Society are set forth, and there is a comprehensive report of the 1928 International Gladiolus Exhibition, by Mr. Charles W. J. Unwin. Mr. A. E. Amos, the Hon. Secretary and Treasurer of the Society, is to be congratulated upon the production of so creditable a work, copies of which may be obtained from him; his address is 10, Bergholt Road, Colchester.

Massachusetts Horticultural Society.—As the present year marks the centenary of the Massachusetts Horticultural Society, the Trustees of the Society have had a special medal struck for award during 1929. This Centenary Medal will be struck in gold, silver and bronze, and the number made will be limited to one hundred. It was designed by the eminent sculptor, John Francis Paramino, its face side being a reproduction of the Society's emblem, a representation of the goddess Flora distributing her gifts of flowers and fruits over the earth.

Flowering Plants at Kew Gardens. — With everything in the open garden frozen and very bedraggled in appearance, visitors to the Royal Botanic Gardens, Kew, are glad to turn their attention to the glasshouses where, especially in the Flowering-plant House (No. 4), pleasure can be found in the various beautiful subjects there to be seen. For, despite the almost heart-breaking conditions with which those responsible for the display in this house have had to contend, the chief difficulty being the lack of light, there is yet a splendid variety of plants in flower, for it would appear that Mr. J. Coutts, under whose guidance the continued floral display in this house is maintained, has a penchant for discovering uncommon subjects which will respond to glasshouse treatment and prove effective during the winter months. Among other things, he is getting together a fine collection of Cape Heaths, and has already secured a good stock of a large number of uncommon species, among them being the beautiful rose-pink-flowered Erica umbellata, which has been lost to cultivation for many years. The work of maintaining this succession of flowering plants is no easy task, as is evidenced by a tour through the several pits in which they are housed previous to transference to their flowering quarters, and it is surprising how generally healthy in appearance the various occupants of the pits are. For instance, we noticed, among others, grand batches of the beautiful Primula kewensis, just coming into flower, also P. Forrestii, as yet showing no signs of blossoming, but apparently responding very well to pot culture, while two very charming flowering shrubs were Coleonema album, suggestive of a shrubby Veronica, with slender, twiggy growths furnished with small, slender leaves and terminated by little clusters of diminutive, white flowers; and Pentapterygium serpens, whose long, leafy and hairy growths were closely packed on the undersides with pendulous, tubular, pale red flowers. The bad effects of the weather on the various Begonia semperflorens hybrids, were obvious, for these, usually laden with blooms at this season, were very sparsely flowered. On the other hand, some two-year-old specimens of Begonia manicata were magnificent, being crowded with graceful sprays of flowers in a delightful shade of soft pink. This would seem to be an extremely useful winter-flowering Begonia for districts where fogs and a general shortage of light is experienced during the winter. Eranthemum pulchellum is just commencing to open its spikes of rich violet-blue flowers and should, in a week or so, be very attractive, while in the beds in the central portion of the house, several specimen Camellias were in full bloom. Another shrub of interest was Ardisia crenata, heavily laden with scarlet fruits which will keep fresh and bright for a period of at least twelve months; while a bright display is also afforded by the Hippeastrums, in many rich and delicate shades. Senecio Petasites and S. grandifolius, both from Mexico, were also worthy of note. The former has been in bloom for over six weeks, and the tall trusses of rich yellow flowers are as attractive as ever, its handsomeness being further enhanced by the large, very Petasites-like leaves. S. grandifolius also has handsome foliage, large and glossy, and rich green, its inflorescence being a crowded head of small, yellow flowers. Several Acacias and Heaths were in flower, also some striking colour forms of Cineraria cruentus, while Pomaderris elliptica, a bushy shrub about three feet high, was heavily laden with flower buds and should present an attractive spectacle in a week or so. Among the most striking subjects in this house were the grand plants of Rhododendron obtusum and R. Kaempferi, in many forms, each plant being literally a mound of blossom, brilliant and striking. Epacris longiflora var. superba was flowering, also the uncommon but rather attractive Veltheimia viridiflora, while, facing one of the doors was a splendid group of Clivia miniata varieta, with large umbels of bright orange-cerise blooms. Primula malacoides and P. effusa were flowering sparingly, but the Tulips, William Copland and La Notre, were extremely fine, while colour was also provided by the fragrant blooms of the Freesias, just commencing to open, Cyclamens, Crocuses in variety, Richardia africana, and Hyacinths in several shades.

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* *Memoirs of the Cotton Research Station, Trinidad, Series B*, Physiology, No. I. "Studies on the Transport of Carbohydrates in the Cotton Plant," by T. G. Mason and E. J. Maskell. Empire Cotton Growing Corporation, 2, Wood Street, Millbank, London, S.W. 1. 1928.

Trials of Chrysanthemums and Gaillardias at Wisley.—The Royal Horticultural Society will carry out trials of early-flowering Chrysanthemums and of perennial Gaillardias in their Gardens at Wisley during the coming season. Three plants of each variety for trial should reach the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, on or before April 6, 1929.

International Institute of Agriculture.—The International Institute of Agriculture, Rome, in pursuance of the suggestions made by the recent General Assembly, has introduced important modifications in the contents of the International Review of Agriculture, with the object of increasing its interest and value. The principal aim of these alterations is to replace isolated or fragmentary items of technical, economic or legislative information by comprehensive studies based on the information available at the Institute, giving a general review of the actual situation in questions of international importance, and having an up-to-date character or being of practical interest for agriculture. As from January 1, 1929, the *International Review of Agriculture* will appear in three separate parts, viz., (1) Monthly Bulletin of Agricultural Science and Practice; (2) Monthly Bulletin of Agricultural Economics and Sociology; and (3) Monthly Crop Report and Agricultural Statistics. The Institute has also, as from January, 1929, re-established the monthly publication of the *International Bulletin of Plant Protection*, which was suspended in March, 1928.

Mr. William Atkinson, V.M.H., J.P.—About fifteen months ago, we published a portrait and biographical notice of Mr. W. Atkinson, head of the firm of Messrs. Fisher, Son and Sibray, of Sheffield. We give Mr. Atkinson's portrait again so as to keep our gallery of Victoria Medallists as complete as possible, as he has now joined the distinguished horticulturists honoured by the Royal Horticultural Society, and entitled to place the magic letters "V.M.H., after their names. Mr. Atkinson is, perhaps, better known in the midlands and the north, than in the south, but his friends everywhere will join in congratulations upon the high honour recently conferred upon him.

MR. W. ATKINSON, V.M.H., J.P.

Haarlem Daffodil Show.—The General Dutch Bulb Growers' Society will hold a special Daffodil Show at Haarlem, on April 17 and 18. Gold, Silver-gilt, Silver and Bronze Medals will be awarded to deserving exhibits, while certificates and awards will be granted to new Daffodils that meet with the approval of the Committee. The Secretary is M. H. Voors, Krelagehuis, Haarlem.

Legacies to Gardeners.—The late Mr. George Acton Davis, J.P., of Julian Hill, Harrow, who died on January 22, left £100 to his gardener, Mr. George Summerfield.

Association of Economic Biologists.—A meeting of this Association will be held at 2.30 p.m., on the 15th inst., in the Botanical Lecture Theatre of the Imperial College of Science and Technology, South Kensington. At this meeting Sir John Russell, F.R.S., will deliver an address on "Some Agricultural Problems in Australia," and F. L. McDougall, Esq., C.M.G., will lecture on "The Commonwealth Council of Science and Industry in its relation to Agriculture." Students of biology are cordially invited.

"The Gardeners' Year Book, 1929."—This useful annual publication, edited by Miss D. H. Moutray Read, and published by Messrs. Philip Allan and Co., Ltd., 69, Great Russell Street, W.C.1, price 5s. net, may well be described as a *pot pourri* of information, much of which is of topical interest to gardeners. Horticultural events of interest during 1928 are recorded, together with short accounts of the various plant-collecting expeditions which were conducted, while other portions of the book are devoted to descriptions of the various botanic gardens, and information concerning the numerous horticultural institutes and colleges, societies, new and noteworthy plants, horticultural publications, etc. Part 2 deals with various cultural topics. The publication represents much labour on the part of Miss Moutray Read, for it has been carefully prepared and excellently printed.

Sodium Chlorate as a Weed-killer.—Farm crop investigators, at the head of whom is Mr. H. D. Hughes, at Iowa State Agricultural College, Kansas, have discovered an effective weed-killer which will destroy Quack Grass, Canadian Thistle, Horse-nettle and Field Bindweed. Many different materials had previously been tried to control the Field Bindweed, which was literally over-running whole farms in Kansas, but it has now been found that sodium chlorate will entirely kill the roots as well as the tops, in spite of the fact that the roots sometimes penetrate the soil to a depth of four feet. It has also been found that sodium chlorate applied in the late autumn kills all Canadian Thistle and the land produces good crops the following season. The chemical is explosive when it becomes thoroughly dry, if it is mixed with fine material, such as dust on clothing, or chaff. Care has, therefore, to be exercised when using it. The quantities used are not given, but the interesting statement is made that calcium chlorate, which has no tendency to explode, may be expected to give as good results as sodium chlorate.

Kent Playing Fields Association.—At the Annual Meeting of the Kent County Playing Fields Association, held at Maidstone recently and presided over by Lord Camden, it was announced in the Annual Report that, although no special appeal for funds has been issued in the past year, the sum of £2,449 had been received in donations, bringing the total amount received up to £13,262. Lord Camden stated that the playing field movement continued to make good progress in Kent, and he referred especially to the keen interest taken in the movement by the Prince of Wales. Lord Camden was re-elected President of the Association.

Horticultural Club.—A Club Dinner and Lecture will be held at the headquarters of this Club, St. Ermin's Hotel, Caxton Street, Westminster, on March 12, at 6.30 p.m., for 7 p.m. The price of the dinner is 6s. 6d., exclusive of wines. Following the dinner, Mr. R. E. Cooper will deliver an address, illustrated by lantern slides, on "Botanizing in the Himalayas."

Seed Potatos.—The National Institute of Agricultural Botany has made an examination of the Potato sections of a representative selection of the seedsmen's catalogues and lists for 1929. Stocks of Potatos under many of the names which appear in these publications have been grown by the National Institute of Agricultural Botany at the Potato Testing Station at Ormskirk in recent years, and have been adjudged by the Institute's Synonym Committee to be "synonymous" with well-known established varieties. It is too early to determine whether in 1929 the varieties named below are again synonymous with the type varieties set against them or with some other established variety, or whether they are, in fact, distinct. Prospective purchasers are advised to satisfy themselves by enquiry or guarantee that such varieties are distinct from, or are, indeed, of greater value than, their presumed types. Nor is a so-called "selected" or "improved" stock of an established variety, whether offered for sale under its original, or under a new name, to be accepted as an improvement without evidence of adequate trial or sufficient guarantee. The name of the type variety is given first, followed by the name or names of synonyms:—Abundance: New Renown; Ally: Goldfinder; Bishop: Advancer; British Queen: Beauty of Essex, Irish Elegance, Royalty and White Stone; Coronation: Crown Jewel; Duke of York: Cherub, Chester Early, Midlothian Early, New Success, St. Paul, Victory and Western Hero; Great Scot: Dreadnought, King John and Lord of the Isles; Immune Ashleaf: Improved Ashleaf; Red King Edward: Cleadon Park, Mons Star; Royal Kidney: Guardian and King of Potatos; Sharpe's Express: Alpha, Earliest of All, Early Favourite and Express; Sharpe's Victor: First Crop; Eclipse (or Sir John Llewelyn): Colonist, Nun Nicer; Snowdrop: First Crop; Stirling Castle: Mighty Atom; Up-to-date: Factor, Longkeeper, Prosperity, Scottish Triumph, Sensation and Tremendous.

Horticultural Congress at Nice.—The tenth Congress of the French National Federation of Horticultural Societies is to be held at Nice this year, on March 30 and 31, under the auspices of the Nice Horticultural Society, which is also arranging to organise an International Horticultural Exhibition. Problems of interest to horticulturists will fill the agenda of the Congress, including the disinfection and sterilisation of soils, the practical organisation of exhibitions, and horticultural apprenticeship, as well as other questions of rather more local horticultural interest, such as the introduction of exotic plants on the Côte d'Azur. To occupy the two days following the Congress, *i.e.*, April 1 and 2, an excellent programme of visits and excursions has been arranged to enable visitors to see the numerous beauty spots in the Alpes-Maritimes.

National Mark for Exported Broccoli.—Until about three years ago, it is stated by the Ministry of Agriculture, the Broccoli produced in Cornwall was raised from local seeds, with the result that the firm, white curds which distinguish the best type of Broccoli, was not apparent in a large proportion of the crop. During the past two years, however, and acting on the advice of the Ministry, better strains have been adopted by the Cornish growers, with the result that Cornish Broccoli is now second to none, and is regarded as likely to find a ready market in Germany and Belgium, and attempts are now to be made upon the exportation of the Broccoli to these countries. With this purpose in view, the various authorities concerned have drawn up a scheme for the grading and the marking of the best export produce with the National Mark.

French Rose Congress at Lyons.—No other town having been specially selected as the venue of the 1929 session of the French Rose-growers' Society, M. Silvestre, the President of the Society, has requested that it be held at Lyons, and his proposal has been unanimously adopted, the more so as it has not taken place at that city since 1912. The dates for this Congress will be arranged to coincide with the annual Lyons fair.

New Rose Competition at Barcelona.—An international new Rose competition is being inaugurated in Barcelona, Spain, in the gardens of the Royal Palace of Pedralbes, with the permission and patronage of the King, who has also offered several prizes. The competition is being organised by the Barcelona municipality, and will be especially interesting on account of the climatic conditions of the Mediterranean city. The Roses will be planted in the open, in the Royal park, which is closed to the public, and tended by members of the public parks staff. There are to be fourteen judges, of whom six will be foreign—one each from England, the United States, France, Germany, Luxemburg, and Holland. M. Forestier, who organised the international Rose trials conducted at Bagatelle, near Paris, will also be asked to accept office among the judges. The King of Spain has offered a large Gold Medal which will be awarded each year to the best foreign Rose, and in the event of a Spanish-grown variety also meriting it, a similar Gold Medal will be awarded thereto. In addition, other awards will be made for certain special features. The municipality will acquire 150 of the best Roses to form the nucleus of a permanent collection and will entertain for five days each year the foreign members of the judging committee.

The "Best Six."—Messrs. G. Bunyard and Co. have issued a catalogue of such unique character that it merits a special note. The catalogue is entitled "Bunyard's Best Six," and it is published "in the interests alike of the beginner, the connoisseur, and the busy man." It contains lists of what the Maidstone firm considers the six best flavoured dessert Apples, cooking Apples, cropping Apples, tender-fleshed Apples, and latest dessert Apples; the six best-flavoured Pears, and best croppng Pears; the best six self-fertile dessert Plums; best six Gages, and the best Plums for bottling. Then follow lists of the best six Irises at stated prices, Delphiniums, Michaelmas Daisies, border Carnations, Phloxes, Paeonies, flowering Cherries, evergreen foliage shrubs, shade trees, weeping trees, early-flowering shrubs, new Barberries, new Brooms, hardy Fuchsias, Lilacs, Clematis, and flowers for drying for winter decoration, making up altogether a very handy and instructive booklet.

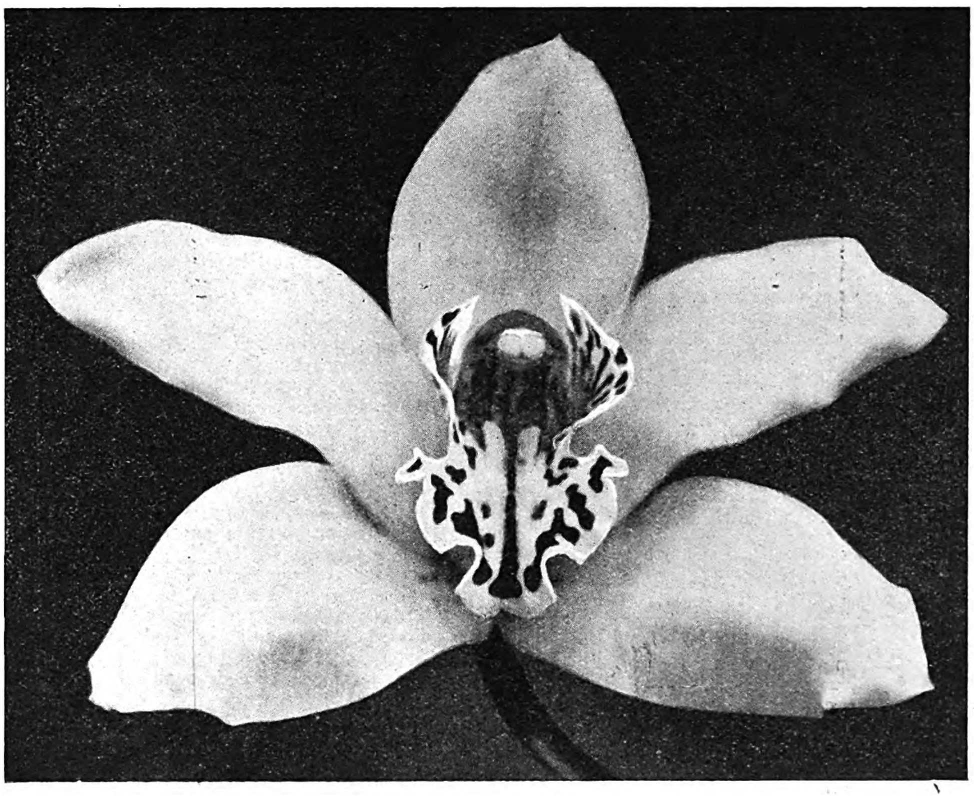

FIG. 87.—CYMBIDIUM LETTY, WYLD COURT VAR.

R.H.S. First Class Certificate, February 26. Flowers white, with purplish-brown markings.

(see p. 168.)

Appointments for the Ensuing Week.—Monday, March 11: East Anglian Institute of Agriculture lecture; Birmingham and Midland Gardeners' Association's lecture; Derbyshire Horticultural Association's meeting; Harrogate and District Horticultural Association's meeting; United Horticultural Benefit and Provident Society's Annual Meeting. Tuesday, March 12: Royal Horticultural Society's Committees meet; Jersey Gardeners' Society's meeting. Wednesday, March 13: Sheffield Chrysanthemum Society's lecture. Thursday, March 14: Derbyshire Horticultural Association's Annual General Meeting. Friday, March 15: Manchester and North of England Orchid Society's exhibition; Association of Economic Biologists' Council meeting and lecture; Saturday, March 16: Leeds Paxton Society's Tulip Show.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Caution.*—Some forty years ago, a few Frenchmen opened a shop in St. James's Street for the sale of miscellaneous plants, and amongst other "nouveautes" sold a baronet a "yellow moss" Rose at five guineas a plant. Between that time and the spring of 1852, I heard nothing of a similar swindle; but in March of the year just mentioned (in Bond Street) two of these scamps sold a friend of mine a collection of new Roses "vary sheep" as they "most go avay," not one of which was otherwise than the veriest rubbish—a plant or two of common Moss and red Provins worked on dwarf stocks being the cream of the purchase. This year, in Regent Street, another "Horticulteur et Fleuriste" has recently commenced victimising the public, an amateur of some standing having bought there last week "Mousseuse Jaune," at the low price of one guinea a plant. I need say no more to convince your readers of the manner in which their pockets will be picked should they venture into this magazine. *C. G. Wilkinson, Western Rose Nursery, Ealing.* We print this. But such warnings are perfectly useless. The crop of fools is inexhaustible. *Gard. Chron., March* 11, 1854.

Publications Received.—*The Lilac: A Monograph*, by Susan Delano McKelvey, pp. 581, with 172 half-tone plates and four colour charts; The Macmillan Company, New York; price £3 15s. 0d. net.—*Nature in Field and Meadow*, by W. Percival Westell, The Sheldon Press, London; price 2s. 6d. net.—*Daily Mail Garden Plans*, edited by P. W. D. Izzard; Associated Newspapers, Ltd., price 1s. 6d.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE Manchester.

Vanda Amesiana.—This distinct, dwarf-growing species produces its fragrant blooms at various seasons, although the majority are produced during the early part of the year. Many plants are now developing flower spikes, and will require a larger quantity of water at the roots than hitherto, while if the plants are placed in a warmer temperature it will assist the development of the flowers. Remove them, however, to cooler and drier quarters when the blooms have expanded, for under such conditions they keep perfect for a considerable time. When they have finished flowering, the plants should be grown in a light, airy position in the intermediate house. As the hours of sunlight increase, occasional spraying with tepid water is beneficial, and so soon as the roots are active, fresh rooting material may be afforded. If the plants have lost their lower leaves and are inclined to be "leggy," they should be carefully removed from the receptacle, first loosening any good roots that are attached to it, and cutting away the lower portion of the stem to a point immediately below some good fresh roots, the plants then being repotted. Fix the stem well down in the receptacle, and then half fill it with drainage, filling the remaining space with a compost of equal parts of Osmunda fibre and Sphagnum-moss, adding lumps of charcoal to keep it open and finishing off with some clean heads of fresh Sphagnum-moss, pricked into the surface. This latter helps to retain moisture later in the season. Plants that do not require repotting should have any sour compost removed and fresh material afforded.

Cattleyas and Laelio-Cattleyas.—The increased hours of sunlight will prove beneficial to this group of Orchids, as many kinds are producing flower stems at the base of the sheaths formed in the late autumn months. In districts where the sunlight is not particularly strong the flower stem will often remain stationary for long periods, with the result that they sometimes decay, and the season's flowers are lost; this may generally be prevented by carefully opening the sheath, from the top down to the bud, but not opening it completely, as that would probably damage the stem at this stage of growth. Water should be afforded the roots in small quantities as the compost becomes dry until the flower buds are increasing in size, when an increased quantity will be needed to assist their full development. Scale insects increase rapidly at this season and soon do considerable harm, therefore they should be removed so soon as detected. As the plants pass out of flower the thick, fleshy sheath and flower stem should be cut off fairly close to the top of the pseudobulb, and the exposed parts dusted with powdered charcoal to prevent decay, which often sets in at this stage if a spell of dull weather is experienced.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Early Permanent Vines.—The shoots of these having been tied down and stopped at the second joint beyond the bunch, next proceed with the pinching of the laterals, at the same time retaining intact the one nearest the extremity for laying in if there is room for extension, but being careful not to retain more leaves than can have full exposure to light and air. In later houses fertilisation must receive careful attention, a constant circulation of semi-dry, warm air being essential to a good set of Grapes; the temperature when the flowering stage is reached should be raised to 65° by night for Black Hamburghs, and 70° for Muscats, that by day ranging 10° higher from fire-heat and about 80° to 85° or 90° when the sun is bright and the external air soft and mild. When vines are in flower, just enough fire-heat should be employed to raise the temperature to the above figures, and a circulation of air, not a cold current, should be maintained, while the floors should be damped with warm water as an arid atmosphere is detrimental to setting. All Grapes are improved by artificial fertilisation. Muscats and Buckland Sweetwater, known to be shy setters, may be assisted greatly by charging a camel-hair brush with Black Hamburgh pollen and going lightly over the bunches every day at noon, or whenever the temperature has reached the maximum.

Thinning Grapes. — The thinning of Black Hamburgh, Foster's Seedling and Madresfield Court comes first, and the capabilities of each vine should be well understood. Like all other operations, thinning should be commenced before the superfluous berries have time to rob those which must remain. Free setters may be thinned fairly freely, and the nearer the approach to the retention of the correct number, the larger will be the berries when ripe. Muscats and other shy setters should be well fertilised before being thinned, as nothing detracts more from an otherwise perfect bunch than a number of seedless berries, and perfect berries always seem to fill up the space if the former are removed at the beginning. All Grapes vary much in closeness of bunch and size of berry, and only those in charge can tell how many berries to leave; each bunch should be full enough to retain its form when cut and placed on the table.

Successional Vines.—These, if now breaking, may be syringed well until the flower bunches are prominent. If the inside borders have not been watered since the house was closed, a good watering with weak liquid manure for old vines, and pure water at a temperature of 80° for young ones, should keep them going until the Grapes have set. After the vines are disbudded and tied, a rise in temperature to 60° by night and 70° by day, and 5° to 10° more under bright sun, should help to draw out the bunches, which should be reduced to one on each shoot.

Ventilation and Temperatures.—After all Grapes are thinned, make allowance for increasing length of days by keeping up the temperatures when the weather is bright and mild; air at night is a great help, even if afforded only in small quantity. The ventilators should be closed early to ensure the full benefit from damping the paths and borders. As the temperature rises, air may be given at 70° and steadily increased as the thermometer rises to 80° or 85°. The great secret of ventilation at this early season is the maintenance of a steady rise in temperature, and early closing to trap the sun-heat. Moisture is necessary to ensure that no scalding or scorching of the shoots will take place after the house is closed for the day at this early season.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens; Wisley, Surrey.

Delphinium Varieties.—The selection of varieties of Delphiniums is a matter of individual taste; some prefer the pale lavender sorts, others the dark blue. Some two-hundred-and-thirty-four varieties of Delphinium were tried here in 1925 and a selection of the best in the various colour groups may be of value to intending planters. Of the Belladonna type, varieties of which are charming as border plants, producing more side-growths than those of the Elatum type, Belladonna grandiflora Captivant, pale sky-blue; Nassau, light blue; Mrs. J. S. Burton, bright blue; and Mrs. Thomson, bright blue, are the most useful. In the Elatum type, which seems to be the most popular, many shades of blue are represented. Among pale blue sorts, the best are Sister Clare, Queen Mary, Blue Princess, Lize and Mrs. Townly Parker; while the most striking of the dark blue sorts are Blue Boy, Corry, Blue Bird, Constance, Hugh Mitchell and Col. Douglas. A selection of those with flowers in shades of mauve should include Mrs. Colin McIver, Glory, Mrs. Shirley, Col. Sir Wyndham Murray, Jean, Marjorie Ferguson, Nora Ferguson, Mrs. A. T. Watson, Millicent Blackmore, and Winsome. Of the dark blue and dark mauve sorts, Lord Derby, Mrs. H. Kaye and F. W. Smith will be found reliable sorts. Violet Queen, King of Delphiniums, Mrs. Greighton, Edward Bromet and Sir Douglas Haig are good varieties of violet and deep purple colouring. A few of the species, although not so showy as the vigorous hybrids, add interest to the garden. D. cardinale has bright scarlet flowers, and is a desirable plant for the centre of the border. D. nudicaule has wonderfully dazzling scarlet flowers; it is quite hardy, but likes a position in a well-drained, warm border. It grows from one to two feet high and should be planted in clumps at the front of the border. D. chinense is an attractive dwarf plant, producing its bluish-purple flowers with great freedom, and will be found most useful for furnishing beds or narrow borders.

Hardy Annuals.—These should be sown so soon as the ground is in a workable condition, as they give better results if given time to become well established before dry weather sets in. It is necessary that the preparation of the ground for these, as well as other crops, should be thorough. Seeds of annuals are so cheap, and usually of such good germinating power, that the average grower is inclined to be over liberal with the quantity used, and when the time for thinning arrives, this work is often neglected until it is too late. Prepare the ground well and sow the seeds in lines at least a foot apart to facilitate hoeing when the plants are small. Thin the seedlings early and periodically until the desired distance apart is reached, and stake those that require support early. When thinning, remove the weak and badly placed plants to begin with. A distance of nine to twelve inches apart is none too much for the majority of annuals, if well-grown, and double that distance will be required for such subjects as Shirley Poppies, Cornflowers and the tall, branching Larkspurs. Where these were sown in the open during autumn and have withstood the recent severe weather, the beds will now require attention. Plants grown under such conditions develop to a much greater size than those sown now, and the true habit and beauty of many annuals is only realised when it is possible to adopt this method of cultivation. A few of the best for autumn sowing are Shirley Poppies, Clarkias, Nemophila, Godetias and Larkspurs.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Chief Assistant Lecturer, Reading University Horticultural College.

Pruning.—All pruning delayed by the recent severe weather should be completed so soon as possible, but under no circumstances should pruning be carried out in frosty weather, or many of the buds intended to produce leader growths on Apple and Pear trees will either be killed or severely injured, thereby affecting the shape of the tree. The angle of the subsequent growth from the leading bud can be altered considerably by the way in which the growth is pruned. The leader growths on upright-growing Apples, such as Annie Elizabeth, Chelmsford Wonder and Christmas Pearmain should be cut quite half-an-inch beyond the desired bud. The "snag" thus left will tend to push the resultant growth outward in quite a marked degree. Trees of more spreading habit are sometimes best cut to an inside bud, as with Peasgood's Nonesuch, or to one on the outside, but as small a "snag" as possible should be left, so as to allow the leading growth to continue on in the same line of growth. In every case, prune to a bud pointing in the direction the leader is required to take. In the case of fruit trees planted this season, there is always the question as to whether they should, or should not, be pruned this spring. In every case this must be decided by the pruner. There are a few vital points which must be considered. If the trees are young and in good soil, and if the planting was carried out last autumn, there need be no hesitation about cutting the growths back fairly hard this spring; delay the pruning, however, until the sap is flowing actively. If the trees are older, or the soil is none too fertile, or the planting was delayed until the spring, there should be little or no cutting of the leader growths this season; if leader growths are unduly long they may, however, be tipped with advantage. The uppermost buds will grow out and develop fruit buds, but those behind will remain dormant, and it is to one of these dormant buds that the growth should be pruned next winter, with the full assurance that perfect leader growths will be produced. In the case of spur growths, no such measures need be taken. Late-planted trees should, after the recent severe weather, have the soil made firm about them, and be mulched with long, strawy manure, which should be renewed later if a dry season ensues.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain,
Brocket Hall, Hertfordshire.

Euphorbias.—Euphorbia fulgens (jacquiniaeflora) and E. pulcherrima (syn. Poinsettia pulcherrima) are, to my mind, two of the most useful plants to grow under glass for winter decoration. The brilliant scarlet bracts prove a great attraction, while the soft colour of E. p. rosea is very pleasing. The white variety of this species does not always produce pure white flowers, but it is more easily grown and will last for a considerable time when cut. The old stools should now be cut hard back and kept somewhat dry at the roots for several weeks, when the roots may be slightly moistened and the tops frequently syringed with tepid water to induce young growths to form for use as cuttings. During the resting period it is not wise to place the plants in a house having a low temperature, especially E. fulgens, for this species requires a temperature not lower than 50°. This applies to pot-grown plants.

Stock Plants.—During the next two months or so many of the winter-flowering pot plants will require attention with regards to propagation, and the ultimate success of many of these subjects will depend on the treatment meted out to them after they have passed out of flower. The following plants may now be cut hard back to induce the formation of strong, healthy shoots for cuttings:—Eranthemums, Eupatoriums, Lasiandras, Plumbagos, Salvia splendens and Jacobinias. Cuttings of most of these subjects will root quite easily if inserted in sandy soil, around the sides of the receptacles, and stood in a propagating frame in a temperature of 60° to 65°. Various winter-flowering Begonias and many other useful plants may soon be taken in hand with a view to securing good cuttings.

Solanum Capsicastrum.—This useful fruiting plant often proves of great service for indoor decoration during the winter months. Seeds may now be sown in a warm house, where germination will soon take place. Where a good strain of this plant exists it may easily be propagated by means of cuttings. The seedlings or cuttings should be kept growing freely during the early stages of growth, to allow the young shoots to be pinched several times to promote a bushy habit. Old plants may also be cut back and grown on again the second year; in fact, they often make the best plants when so treated. During the summer months the plants may be stood in a cold frame, the lights of which may be removed except when heavy rain is falling.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder,
Knowle Gardens, Dunster, Somerset.

Broad Beans.—Another batch of Broad Beans should be sown, sowing a larger quantity of seeds than previously; the present sowing should be for the production of the main crop. The Broad Bean repays generous cultivation by producing heavy crops of fine quality. Allow two-and-a-half feet between the rows, and eight inches between the plants.

Early Carrots.—These should be sown in shallow drills ten inches to one foot apart, on a south border. For sowing the seeds, choose a day when the ground is dry and in good working order, taking care that the soil has been forked well and a fine tilth produced.

Chives.—These will now be commencing to grow, and if a fresh bed is required, the present is a good time to lift and divide them. If cut regularly, a supply of leaves for flavouring and salads should be maintained for a long time.

Herbs.—Herbs to be raised from seeds should be sown now in boxes, and raised under glass in heat. Thyme, Tarragon and Mint may be lifted and divided, if an increase in stock is desired.

Potatos.—More Potato sets for planting shortly should be set up in boxes for sprouting, and placed in a little warmth. Another batch should be put in frames to maintain a successional supply of tubers. Early Potatos in pots will now need top-dressing with soil enriched with an approved fertiliser.

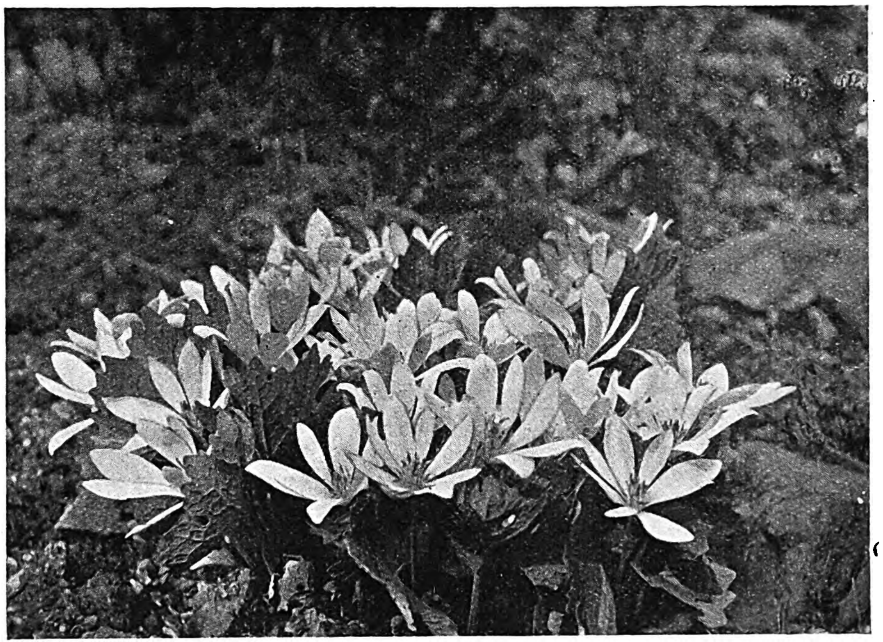

FIG. 88.—SANGUINARIA CANADENSIS VAR. GRANDIFLORA.
(see p. 178.)

Seed Sowing.—If plenty of frames are available, another sowing of Brussels Sprouts, Cabbage, Cauliflower, Lettuce, Leek and Savoys may be made in beds. The raising of these subjects in frames is preferable to sowing them in the open garden, where the seedlings are liable to be damaged severely by finches, linnets, etc.

Seakale.—To maintain a supply of Seakale, a batch of roots should be put in every two weeks, either in boxes or large pots. Keep the roots moist and well-covered up. Syringe them every morning and evening, and maintain a temperature of 55° to 60°; too high a temperature will cause them to grow too quickly, the growth, as a result, being thin and weak.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq.,
Rosemount, Monkton, Ayrshire.

Strawberries.—The ground between the Strawberry rows should be stirred with a hoe, or, if necessary, a fork, and a good dressing of half-decayed stable manure applied as a top-dressing; this serves the purpose of feeding the plants, and after it has been well washed with rain it keeps the fruits clean, and also helps to conserve moisture in the soil during dry weather.

Raspberries and Black Currants.—Where new plantations of these have been made, cut the canes of the former down to six or eight inches from the base to encourage the formation of good, strong canes the first season. Young Black Currant plants should also be cut back severely, for the whole future of the plantation depends on a really good growth the first year.

Vegetables.—The beds of autumn-planted Cabbages, autumn-sown Onions and Spinach should be hoed at frequent intervals, and a little fertiliser dusted between the rows will assist growth, but nothing of a forcing nature should be given until danger from frost is past. Where desirable, autumn-sown Onions may be transplanted, but they are much too liable to bolt to make transplanting really worth while.

Border Carnations.—If planted in their permanent quarters last autumn, these require attention after the frosts, as they are often lifted out of the soil during frosty weather, especially if not too well rooted. If pressed back into place and a little dry soil is placed around them, they soon take root again. The same remarks apply to most subjects planted out last September or later.

Hardy Primulas.—Where stocks of these have been raised from seeds, no time should be lost in placing the plants in their final quarters. True, these Primulas should have been planted out in autumn, but the seasons in the north are most unkind to this delightful family, as few of its members survive the alternating frost and rain, so that one finds it best to plant them out at the earliest possible moment in spring, making sure they are moved with plenty of soil adhering to the roots. Most of these Primulas like partial shade in summer and a cool root-run, and under such conditions few of them fail to attract attention.

Early-flowering Chrysanthemums.—Cuttings of these should now be rooted in boxes of sandy soil, surfaced with a layer of clean sand. Select suckers about three inches in length for this purpose. They may be rooted in a temperature of 65° to 70°, but should be removed to cooler quarters so soon as roots are produced and new growth is visible. Keep them near the glass and rebox or pot them before they become crowded, as they are better left unstopped until a fortnight or so after planting out, this being generally done about the first week in May.

ALPINE GARDEN.

SANGUINARIA CANADENSIS.

There is no more delightful plant for a cool place than the Canadian Bloodroot, and it combines with its chaste loveliness an amiable disposition, unquestionable hardiness, and the great merit of living for ever, and that without asking any attention. S. canadensis appears in spring, the single, bluish-grey and rosy-green leaf enclosing the rising flower in a pointed scroll. Then the beautifully-lobed, palmate leaf expands, disclosing as it does so the snow-white flower in the sheltering embrace of its opalescent cradle. Slowly extending its stem, the flower eventually stands well above the leaf, so that a cluster of plants gives the appearance shown in the illustration (Fig. 88). These blooms are rather more than an inch in width, but there is a considerable variation in the species in this respect, the best form that I have been able to acquire being sometimes listed as S. c. grandiflora (majus). This is rather later-flowering than the type, as May often arrives before the flowers are fully developed, and these are about eight inches high.

Although it is generally regarded as a woodland plant, I find S. canadensis does much better where it gets a fair share of sun, always provided the soil is cool and enriched with some leaf-mould or other retentive vegetable matter. Seeds are produced in quantity, and this affords the best means of propagation. Germination is not so free as one would expect it to be, and I have never yet seen a self-sown seedling. But a moderate proportion may be raised by sowing the seeds in a pot of sand and leaf-mould placed in a cool frame or covered with a pane of glass in a shady spot.

S. canadensis was introduced so long ago as 1680, but it does not seem ever to have been other than uncommon in gardens generally. It is one of the Poppyworts (Papaveraceae) and is familiarly known in America as the Puccoon. *A. T. J.*

CAMPANULA KOLENATIANA.

It is unfortunate that the lovely Campanula Kolenatiana is one of the monocarpic members of that invaluable genus, the Campanulaceae, as its attractions are such that once it has flowered it is difficult to content oneself with its absence from the garden. The propagation of this class is apt to be overlooked and unless seeds are saved or plants again purchased from a nursery, a gap will be visible where this beautiful plant once flourished. But this Campanula is worthy of a considerable amount of care and trouble and, as it is in commerce, I should advise those who know it not to secure a plant or two this spring. The late Mr. Farrer thought highly of it, and his description is so alluring that the present writer, who prefers the perennial to the biennial species, was induced to cultivate it, and much enjoyment followed when C. Kolenatiana came into bloom.

In its native habitats in the Caucasus it is found in rocky places, and in English gardens should have a light, stony soil and a sunny position. It has a strong root-stock, which produces a number of branching stalks with scalloped, heart-shaped or oval, basal leaves, and when the plant comes into bloom it forms a ball of large, violet-blue flowers, nodding gracefully over the plant. *S. Arnott.*

SEDUM PRIMULOIDES.

A native of Yunnan, where it was collected by Forrest, this Sedum is so distinct that it is hardly likely to be confused with any other. It is a partially deciduous species, making a compact little plant about three inches high, each of the many rather woody growths terminating in a dense rosette of fleshy, bright green, pointed, obovate leaves, barely a quarter-of-an-inch in length. The flowers, which are borne in August at the ends of short, leafy shoots springing from the base of the rosettes, are cone-shaped and pure white. Dr. Lloyd Praeger points out that this interesting species is closely allied to S. Praegerianum, and that it is apt to lose its very dwarf and alpine character under cultivation, and to become looser and more branched. It appears to be hardy enough in the usual sense, but the change of habit alluded to seems to be its undoing, for it is not an easy plant to keep. Dampness is apparently the cause of the trouble and here, in the humid west, I find it particularly apt to rot away in winter. Even the protection of a pane of glass does not always prevent this. My longest-lived plant was growing among some loose stones at the base of a dry south wall, but it eventually went as others have done. A dry moraine, with a winter covering of glass, would probably suit this species best. *J.*

SIDERITIS EUBOEA.

The genus Sideritis is not well represented in British gardens, and few of its members are really of sufficient value to induce us to make room for them when there are so many plants of superior effect. Of the hardy species described, S. euboea is the only one which seems to be available, and even that species seldom finds its way into gardens, possibly because it is rarely offered by the trade. The Sideritis, whose English name is the Ironweed, belongs to the Natural Order Labiatae; and the various species come from the south of Europe, principally from Spain. The species under notice, S. euboea, whose most suitable position is on a very sunny, hot, well-drained slope, or the moraine, is a trailing plant, with white, woolly foliage and spikes of yellow, Labiate flowers about six inches high. They are not specially effective, yet the plant has about it some points of beauty.

S. euboea is increased by seeds or cuttings. It is hardy when given the treatment suggested above, but in districts where the winter rainfall is very heavy, some protection, such as a sheet of glass overhead, will be appreciated. *S. A.*

THE OMPHALODES.

Rivalling the Gentians in the colouring of their flowers, in fact, comparable even with the elusive Eritrichium nanum in this respect, the Omphalodes exercise the same fascination over alpine plant growers as do the Gentians and Eritrichium, and although only a few species are in cultivation, yet at least one, *i.e.*, O. Luciliae is, like several of the Gentians and certainly like the lovely Eritrichium, so difficult to grow well that success with it is no mean achievement.

On the other hand, there is the lovely little Blue-eyed Mary, O. verna, which is familiar to all as a desirable spring-flowering subject of the easiest culture, being happy no matter where it is planted, so long as afforded slight shade and a cool root-run in leafy or peaty loam, and especially suitable for the rock garden or open woodland. For O. verna is a quick-growing plant of dwarf habit, forming ever-widening mats, by means of trailing growths which root as they spread, of fresh green, heart-shaped leaves, lightened from March until the end of May with dainty sprays of rich, azure-blue, white-eyed Forget-me-not flowers. Little Blue-eyed Mary, in nature, haunts shady copses and open woodland, and is never so attractive as when naturalised in such places. And this little, unimposing Omphalodes has achieved historical fame, for it is stated to have been the favourite flower of the hapless Queen Marie Antoinette, no doubt recalling to her, during the unhappy latter part of her life, memories of pleasant childhood hours spent rambling through the copses and woodlands around her native home, where was to be found little Blue-eyed Mary. The white form of this plant cannot compare with the type, for it is in the refreshing blueness of the flowers that the chief charm of O. verna lies, although for this reason var. alba should not be deprived of a position similar to that afforded the type.

Another member of this family which is of easy culture and quite hardy is O. cappadocica, from Asia minor. Whether cappadocica is the correct name of this species or not is difficult to tell, for many authorities describe it under the name O. cornifolia, under which appellation it is also offered by many of the leading alpine plant nurserymen, while another of its synonyms is O. Witmanniana. However, despite the doubt as to its correct name, it is a worthy applicant for a place on the rock garden, where it should be planted in cool, leafy loam in a sheltered nook, there to form a compact tuft of prominently-veined leaves, surmounted during April and May, and often again in late summer or autumn, with sprays up to one foot high of lovely, comparatively large, bright gentian-blue flowers. If happily established—a state easily accomplished—O. cappadocica will produce its dainty sprays in abundance, and when so seen is an extremely attractive subject.

And then we have O. Luciliae! Difficult, indeed, is it to adequately describe the charms of this most lovely plant from the mountains of Asia Minor, and even more difficult is it to secure the full beauty of it under cultivation, for O. Luciliae, like so many of the élite among alpine plants, is notoriously a "bad doer." If it is coddled it is sure to die, or merely linger as a shadow of its beautiful self, while, if left to its own devices, it will most likely fall a victim to slugs, which have a special fancy for this and other extra choice plants. So, wherever it is grown, O. Luciliae must be watched over and guarded from its enemy, the slug, while its other enemy—winter wetness—must be counteracted by a carefully chosen position, a warm, horizontal crevice with a slightly projecting rock above to ward off the rain being, perhaps, most suitable, provided that the plant can secure plenty of soil moisture during the summer, and its roots have a free run in light, but not poor, loamy soil, containing an abundance of limestone chips and mortar-rubble. Or O. Luciliae may be planted in a gently sloping and well constructed moraine, in a sunny, but not scorched position, protection from winter wetness being secured by placing a pane of glass above it. And so, having provided it with conditions which would appear ideal, O. Luciliae might condescend to take root and, happy thought, it may even flourish and proceed to form a tuft of lovely foliage—long-stalked, slender, oval leaves, smooth, and with a bluish, waxy covering. And from among these, during early June and intermittently through the summer months, will be produced lovely spreading sprays of porcelain-blue flowers, exquisite in the clearness of their colouring, and like large, flattened Forget-me-nots, each nearly half-an-inch across.

If it is not desired to commit this treasure to an open air existence, then it may be included in the alpine house collection, for it responds moderately well to cultivation in a pan of well drained compost, provided, of course, care is exercised in the watering of it. This latter is very important, for if, while in growth, O. Luciliae receives an insufficient supply of moisture at the roots, it will present a thin and bedraggled appearance, while equally dire will be the results of over-watering.

O. nitida (syn. O. lusitanica) is not uncommon in gardens, and although, perhaps, not so attractive as the foregoing species, is yet worthy of a place in the rock or wild garden, if space can be found for it. It is a native of Spain and Portugal, and forms large clumps of long-petioled, rich green leaves, the undersides of which are pubescent. Its small, blue flowers are produced in loose sprays, on erect stems, from about midsummer onwards. O. nitida should be planted in a fairly sheltered position, as it does not always survive in cold situations.

There are several other perennial Omphalodes which are desirable, but extremely rare and not easy to obtain, notably O. rupestris, which forms a dense, silvery-leaved tuft and has flowers, borne on delicate two-inch stems, of a delightful shade of blue. Another rarity is O. Thomsoni, from Tibet, while O. florairiensis, described as a hybrid between O. nitida and O. Luciliae which originated at M. Correvon's nursery at Floraire, Geneva, is stated to be very desirable, although whether it is now in cultivation would appear to be doubtful. There are also two species which are natives of Japan, namely, O. japonica and O. Ikumae, which would seem to be very desirable, O. japonica being, probably, better suited to English gardens than O. Ikumae, as it is more vigorous and produces more flowers.

Lastly, consideration may be afforded the charming annual species, *i.e.*, O. linifolia, popularly known as Venus's Navelwort, and at one time considerably more common in English gardens than it is to-day. It is a native of southern Europe, being particularly plentiful on the dry, stony hills of Spain and Portugal. It is hardy, and may be sown either in spring or autumn in the open ground, the resulting plants attaining a height of twelve inches or more, their erect stems, clothed with linear-lanceolate leaves, being terminated from midsummer onwards with racemes of white flowers, sometimes tinged with blue. It produces seeds freely and is a very attractive annual for a hot, dry situation. *M. W.*

ORCHID NOTES AND GLEANINGS.

TWO NEW CYPRIPEDIUMS.

Cypripedium Warden Pearl.—This finely-shaped hybrid is derived from the intercrossing of C. Moonstone (C. Lord Ossulstone × C. Mrs. F. Sander) and C. Psyche (C. niveum × C. bellatulum). The dorsal sepal is two-and-a-quarter inches broad, pure white, except for a small area at the base, which is diffused with lemon-yellow. The petals are two-and-a-quarter inches long and one inch wide, white in front, becoming delicately suffused with rosy-pink in the centre, the basal portion being tinted with lemon-yellow and lined with purple. The shapely lip is white around the broad, open margin, the remainder being heavily suffused with rosy-pink. The broad shield in front of the column is white, with a bright yellow centre. In form and colour, this Cypripedium has many of the characteristics of C. A. J. H. Smith, and is a very desirable addition to this section of hybrids.

Cypripedium Warden Pet.—This, another desirable addition to the C. niveum section of hybrids, is the result of crossing C. Virgo (C. Godefroyae × C. Psyche) and C. Circe (C. Tura × C. Zampa). The dorsal sepal is one-and-a-half inch broad, white, with a slight suffusion of rosy-pink on the basal half. The petals are two-and-a-half inches long, very flat, and about an inch wide, white, lined and spotted with bright rosy-pink. The lip is very much like that of C. niveum, white, heavily suffused with rosy-purple.

Both these hybrids have been raised and recently flowered in the collection of Clive Cookson, Esq., Nether Warden, Hexham (gr. Mr. W. J. Stables), where the C. niveum section of hybrid Cypripediums is well and extensively cultivated. *H. J. C.*

DENDROBIUM DELICATUM.

The Australian Dendrobium delicatum (Fig. 89) is believed to be a natural hybrid between D. Kingianum and D. speciosum var. Hillii. The flowers are white, with the exception of a number of minute, almost imperceptible, brownish-purple spots on the lip; the racemes are a foot or more in length, bearing from twenty to thirty flowers. These racemes spring from the axils of the leaves at the apical portion of the pseudo-bulbs, sometimes two or three appearing from one pseudo-bulb, and even on pseudo-bulbs two or three years old.

Although not a showy Orchid, it is very pleasing and attractive as a large and well-flowered specimen. The plant exhibited at the R.H.S. Hall, on February 12, this year, was bought as D. Kingianum var. album, at Mr. Smee's sale on May 5, 1902, and grown at Rosslyn, Stamford Hill, London, for twenty four years; although it produced flower spikes freely at Stamford Hill, many of the buds and flowers were lost owing to the adverse atmospheric conditions. The plant was purchased for S. G. Brown, Esq., at the Rosslyn sale, and has apparently appreciated the clearer and purer air of Shepperton, as this season it produced twenty-four racemes and developed its flowers perfectly, which is further proof that this Orchid, like many others, is a lover of light and pure atmosphere.

Dendrobium delicatum should be grown in a light position at the warmest end of the cool intermediate house with such plants as Odontoglossum grande, Lycastes, Maxillarias, Sobralias and Miltonias, and given as much sunlight as is consistent with the health of the other inmates of the house. After flowering, the plant has a period of rest, and during that time should be kept somewhat drier at the roots, applying sufficient water only to prevent the pseudo-bulbs from shrivelling.

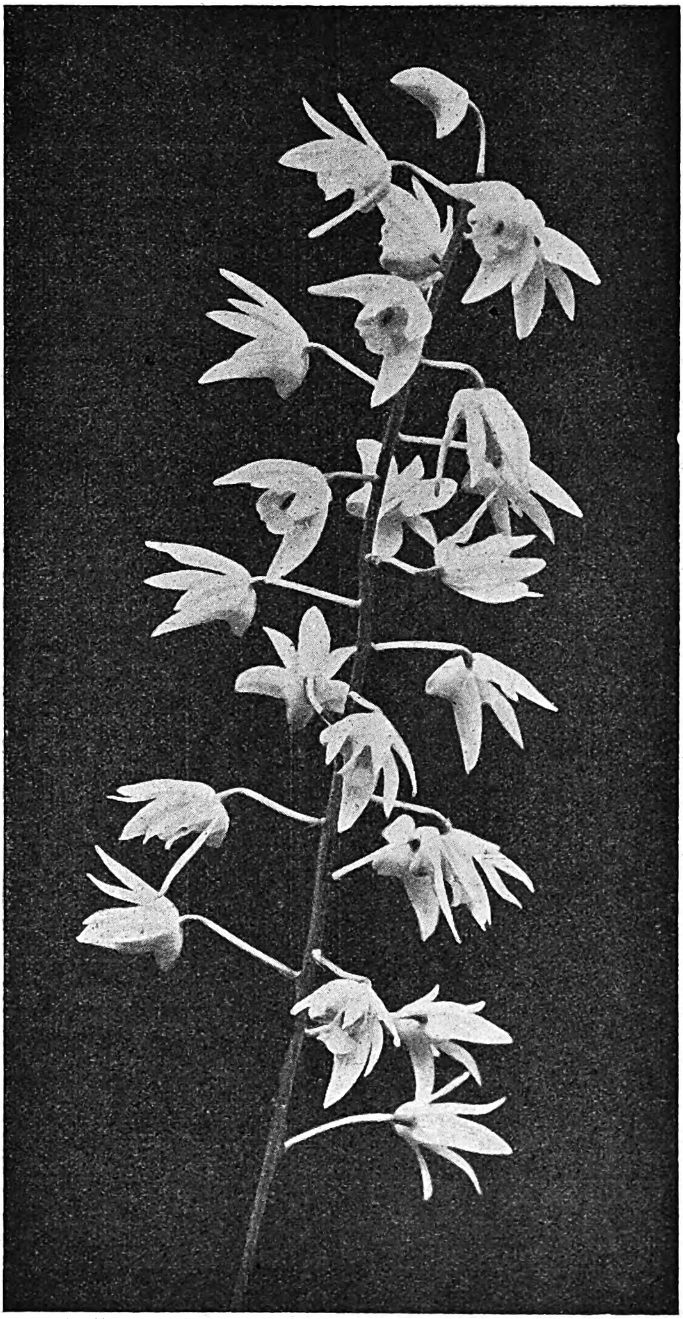

FIG. 89.—DENDROBIUM DELICATUM.

So soon as growth commences, any necessary repotting should be done, turning the plant out of the pot carefully, removing all impoverished material, and cutting away all dead and decaying roots. The new pot should be of sufficient size to allow the plant to remain for two or three years without disturbance; half fill the pot with crocks, place the plant level with the rim, and work the compost carefully among the roots. Pot moderately firmly, using two-thirds Osmunda or A.1. fibre and one-third Sphagnum-moss cut moderately short, mixing the whole well together. If the roots and material are in good condition, the plant may be potted without any disturbance. After repotting, supply water rather sparingly until the roots have permeated the new material, and spray the plants overhead on bright days. When the new growths are well advanced and near completion, afford water to the roots freely, and when the plant is developing its buds and flowers, never allow it to become dry. Keep this Orchid free from thrips and scale by fumigating the house at intervals and sponging and cleansing the growths with a suitable insecticide. *F. W. Thurgood, Brownlands Gardens, Shepperton.*

INDOOR PLANTS.

CALLIANDRA HAEMATOCEPHALA.

About a year ago, I received a rooted cutting under the above name from Mr. Free, horticulturist at the Brooklyn Botanic Garden, and, being unacquainted with the species, I endeavoured to obtain information concerning it, but could find no mention of this plant in any reference book at my disposal, and so was forced to the conclusion that Calliandra haematocephala is not common in cultivation.

It succeeds well under stove-house conditions and is of rather lax, shrubby habit; my plant attained a height of approximately two-and-a-half feet last season. The alternate leaves are bipinnate, each pinna consisting of seven to ten pairs of pinnules. The terminal leaflets are larger than those at the base of the pinnae and average, on a well-developed leaf, about two inches in length by three-quarters-of-an-inch in breadth; each has two prominent nerves. The leaves and younger stems are dark green and pubescent, while the more mature stems assume a brownish hue.

Shortly after Christmas the inflorescences (which had been developing for a considerable time) commenced to expand, the flowers remaining in good condition for two or three days and following each other in acropetalous fashion. The peduncles are axillary and about two-and-a-half inches in length, and at their terminations the unopened flower buds aggregate and bear a striking resemblance to an unripe Blackberry, being dull red in colour. When they open, the petals of the small flowers are pink, but it is the bunch of protruding stamens and styles which forms the showy part of the flower. These are bright crimson and each stamen carries a black anther; together, the flowers form a hemispherical head of bloom about four inches in diameter and some two-and-a-quarter inches in depth, like a small powder-puff in general appearance.

The genus Calliandra is included in Leguminosae, and consists of some one-hundred-and-twenty species, distributed throughout the tropics. Bailey, in his *Cyclopedia of Horticulture*, describes four species and mentions four others. The Brazilian C. Tweedyi is cultivated in choice collections of stove plants. *T. H. Everett, New York, U.S.A.*

BULB GARDEN.

TRICYRTIS.

It requires some courage to write much in favour of the Tricyrtis, the Toad-Lily of Japan, in face of what the late Reginald Farrer stated of the genus in his inimitable work, *The English Rock Garden, i.e.*, that they "emit large and evil flowers." Others are more complimentary, and one writer of reliable standard works calls the various species "distinct and ornamental plants." It is not easy to follow the golden mean between the two, but certainly the plants are so distinct that they are well worth trying, while their intrinsic attractions are, at least, sufficient to give them a claim for inclusion in a good collection of hardy flowers. This remark is made with some reservation, as authorities generally agree in pointing out that they are often so late in flowering that the frost overtakes them before the blooms open, and, in consequence, they recommend that they should be grown in a pit or cool greenhouse. This late-flowering habit is a great drawback in cold districts, but in good seasons, and if the Tricyrtis are planted in a warm position, even the lapse of a season or two should not warrant their exclusion. The treatment afforded them is usually that of Trilliums, although the latter prefer a little shade, which is inadvisable in the case of Tricyrtis, as it would retard their flowering. I have always grown those I have tried in a light soil and a warm, sunny position, giving them water when they seemed to require it, although they are woodland plants in their native haunts in Japan.

The name Tricyrtis is derived from *treis*, three, and *kurtos*, convex, on account of the three outer segments of the perianth having sac-like bases. The genus belongs to the Natural Order Liliaceae and the Tribe Uvulariae. They are mostly natives of Japan, but one of the species enumerated in works of reference, T. pilosa, comes from China, and another, T. pilosa, from Sikkim. So far as I can ascertain, the species in commerce are T. hirta, from Japan; T. macropoda, also from Japan; and T. pilosa, already mentioned. Farrer gave a rather alluring description of another, the Japanese T. Hototogisu, meaning the nightingale of the woodlands." This species has six-inch stems and sprays of flowers, but I do not think it is on the market. All the others are of much the same appearance, but the best of all, because of its earlier flowering habit, as Farrer stated, is T. macropoda.

If grown in good soil, T. hirta will attain a height of from two to four feet; it has alternate, lance-shaped, green leaves, corrugated and hairy. The flowers are produced on the ends of shoots and in the axils of the upper leaves; they are white or pinkish, spotted with violet or purple. The flowering period of this species is from August to October, nominally, but is generally later.

T. macropoda grows from three to four feet high, and has pointed, oblong leaves four or five inches long, downy on the under surface and smooth above. The flowers are of a pale purple or pink hue, spotted with deep purple. According to some authorities they are greenish-yellow, but those specimens I have grown have had pale purple grounds. This species was figured in the *Botanical Magazine*, t. 6,544.

T. pilosa hails from the Himalayas. It grows to from two to four feet high, and has hairy, stem-clasping leaves four to six inches long, the flowers being dull and white in colour, with large, dark purple spots. It was figured in the *Botanical Magazine*, t. 4,955.

MERENDERA CAUCASICA.

The Merenderas, small plants with twisted tubers or bulbs, are closely allied to the Bulbocodiums and Colchicums; the name Merendera is that applied in Spain to the Colchicum. Of the few recognised species, so far as I am aware only three are in commerce, these being M. Bulbocodium, M. caucasica and one named M. sobolifera. Few are grown in British gardens, M. Bulbocodium, a Pyrenean species with pink flowers produced about August, being the best known. For some time, M. caucasica, said to be synonymous with Bulbocodium trigynum, and a native of the Caucasus, has been unobtainable. Last autumn, however, Messrs. G. C. van Tubergen, junr., Ltd., offered bulbs of this species, and a group of this flower is now in bloom (February 9), the first flower opening about a week ago. This Merendera has small, globular flowers, white, tinged with violet or lilac, and, although not showy, is very pleasing and welcome so early in the year. Authorities differ regarding its flowering time, and it is probably earlier this spring than it may be in future, as one frequently finds that bulbs which have been dried off are earlier the first season. In any case, M. caucasica will be welcome at any time. April and May are given as its usual flowering season, but I think that is rather late. The narrow leaves come after the flowers begin to open.

A sandy, rather moist soil is recommended for it, but in order to keep the flowers free from defilement by splashes of soil in wet weather, I have surfaced the bed with chips. M. caucasica is figured in the *Botanical Magazine*, t. 3,690.

GALANTHUS NIVALIS VAR. VIRESCENS.

Galanthus nivalis virescens is a curious variety of the common Snowdrop, G. nivalis. It was originally distributed from the Vienna Botanic Garden, Professor Fenzl, the late Director there, having grown it, and from him Max Leichtlin, of Baden-Baden, bought two bulbs and sent one to Mr. James Allen, of Shepton Mallet, and thus its cultivation in British gardens was commenced. It is a late-flowering variety of B. nivalis, and is noteworthy from the presence of so much green on the flower. The inner segments are almost entirely green, and the outer ones are faintly lined or flushed with green, except at and near the edges. G. n. var. virescens is prettier than would be supposed, and those who have grown it once are sorry to lose it. *S. Arnott.*

HARDY FLOWER BORDER.

CAMPANULA LACTIFLORA.

The specific name of this Campanula would lead us to expect milky-white flowers, but the garden varieties usually grown are in shades of soft blue, with a mauve basis. This Campanula has been described as one of the best half-dozen hardy perennials, and a well grown clump with a dozen six-foot stems, skilfully arranged and supported, may well be the most beautiful object in a herbaceous border in its season, while its sweet scent is by no means the least of its attractions. But it is not without its disadvantages, one being the difficulty of either moving or propagating it. An established clump has very long, fleshy roots, so that it is a risky thing to lift it with the intention of dividing it, while shoots taken off the stock in spring are difficult to strike. One way in which new plants may be obtained is to get a piece from the side of the clump, with a piece of root attached—and this is not easy—and plant it at once where it is intended to grow, when it will make a moderate flowering plant in two years. In some soils and conditions C. lactiflora produces seeds freely, but never with me. Seedlings vary much in colour and not all are equally desirable.

This plant needs careful tying up and the sheaf fashion does not meet the case at all. Its growths are not only tall, but succulent, so that it needs tying almost to the tips of the stems, and even then the short sprays or laterals upon which nearly all the flowers are produced are so brittle that they sometimes give way in a heavy rain and make the whole plant a wreck.

C. lactiflora requires a deep, moist soil to produce its full effect, while the flowers last better if in partial shade. When putting in new plants it is sometimes necessary to make holes nearly two feet deep to allow the roots to go straight down their full length and have something beyond to start upon. *A. P.*

WOODLAND GARDEN.

TRIENTALIS EUROPAEA.

There is no more dainty woodland plant than Trientalis europaea, which is a native not only of Europe, including parts of Scotland and England, but of a considerable portion of the northern hemisphere. Commonly known as the Chickweed Wintergreen, this comely little plant is a member of the Primulaceae. In some gardens it grows and spreads abundantly, even in grass, but in others it is not so easily satisfied. Its natural desire appears to lean towards partly-shaded spots and a cool, light vegetable soil. Accommodated thus, it will produce, in spring, a single, slender stem bearing a few small leaves, and terminating in a whorl of six or seven much larger ones, suggesting those of Herb Paris. Then, from the centre of this leafy rosette arise, in June, from one to four hair-like pedicels of a pale red tint, each of which terminates in a single flower. These pretty, star-shaped blossoms, which are pearly-white, sometimes suffused with a touch of pale rose, are the last word in fragile delicacy. In their colour, their form and their poise, they have a fairy-like grace of enchanting loveliness; and the fact that their time is short, for they do not stay long, only tends to accentuate their charm.

T. europaea, I have to admit, has not been an unqualified success here. It has not shown any inclination to naturalise, and does not display that heartiness—if one can apply that word to such an elf—which it does in some gardens. However, a generous friend having sent me a slab of turf full of the precious thing, I can look forward with buoyant hopes. *N. Wales.*

TREES AND SHRUBS.

THE PROPAGATION OF ARBUTUS.

The propagation of Arbutus from seeds is the best method to follow with the true species; and also, to a certain extent, with Arbutus andrachnoides (hybrida), for although in all cases the original type plant will not be exactly reproduced, some interesting varietal forms may be secured. Seeds of the European species are obtainable from continental sources, while seeds of Arbutus Menziesii may be purchased from American seedsmen, although young plants of this species have been raised successfully from seeds produced in Britain.

The cleaning of seeds from the "Strawberries" of Arbutus Unedo, A. Andrachne and A. andrachnoides is a very tedious business, but one that repays care; it is, perhaps, best done by just picking out the seeds from the sticky flesh and rubbing them in dry sand; this will effectively remove most of the mucilaginous coating, and the seeds may then be sown in pots or pans in an ordinary mixture of loam, leaf-soil and sand, with or without the addition of peat.

The seeds are comparatively small and need just a light covering of finely sifted soil. After sowing, which is best done in January and February, the seed-pans should be placed in a greenhouse having a temperature not lower than 45°, where the seeds will usually germinate in from four to six weeks. When large enough to handle, the seedlings should be potted singly into small pots. From the very earliest stages the young plants will need every care, as all the Arbutuses are notorious for their resentment to root disturbance. Potting on as required and then planting the young plants into their permanent positions is recommended in preference to planting out in a nursery bed, as even young plants transplant badly.

It will be found that the seedling plants, in the main, will grow away very vigorously and attain a height of four feet in four years. One precaution should be taken and that is to securely stake the young plants for the first few years as, being top-heavy, they are easily blown over and broken off at the "collar" by the wind.

For some obscure reason, seedling plants of Arbutus—particularly of Arbutus Menziesii—will die off very suddenly, even when they appear to be established and in good health, and have attained a height of one foot or more. Plants which, to all appearances, are quite happy and thriving one week will be dead the following week and, at present, no satisfactory reason can be advanced for this behaviour. Other plants possessing the same unfortunate peculiarity are Arctostaphylos Manzanita, Eucryphia cordifolia and, to a smaller extent, Eucryphia pinnatifolia.

The varietal forms of the common Strawberry Tree must be propagated by vegetative means; more often than not grafting is resorted to, using seedlings of Arbutus Unedo as the stock. Grafted plants, however, tend to become less tolerated than formerly, and a plant on its own roots is always more desirable. The layering of suitable branches gives quite good results, but extreme care is needed when transplanting the rooted layers.

Propagating Arbutuses by cuttings has apparently been seldom tried, and the following results may be of some value as suggestions to those who like to raise their own plants. Cuttings of such varietal forms as Milleri, rubra, quercifolia, and integerrima will root quite successfully if made about three inches long, of the current year's wood, taken from October until January, selecting the short, side branches near the top and making them with a slight heel of older wood, or severing them at the junction of the current and previous years' growths.

The cuttings should be made carefully and inserted in pure sand in a propagating frame having a bottom temperature of about 60°, where they will produce sufficient roots in from six to ten weeks to permit of potting. Cuttings inserted on October 20, 1928, were potted up in January, 1929 (Fig. 90), and therefore have a long growing season ahead.

A plant of Arbutus Unedo raised from a cutting inserted in January, 1925, is now (January, 1929) over two-feet-six-inches high, and possesses quite a good leading branch and symmetrical appearance. A cutting of the variety quercifolia inserted at the same time has developed into a bush about two feet high. The rooted cuttings require the same careful treatment as advised for the seedlings; and, except for being a little less vigorous in growth, they exhibit every promise of forming good specimen plants. *F. P. Knight, Kew.*

BUDDLEIA ALTERNIFOLIA.

Although this shrub was introduced by the late Mr. Reginald Farrer from the mountainous regions of south-west China so recently as 1914, it has already become well-known in gardens where choice shrubs are grown. It has been a worry to botanists, as it is the only Buddleia with alternate leaves, instead of opposite ones. It was found growing on dry, sunny banks, but although it is in such positions that it produces those "waterfalls of purple beauty" which Farrer saw, it is very accommodating, as may be seen at Wisley, where it is growing by the side of the big pond. But anything like dampness and shade results in such lanky growths that it loses its character of a Weeping Willow covered with mauve blossom in May. I planted one in such a position a few years ago, and it made seven feet of growth in the second summer and produced no flowering sprays for two or three years afterwards. It will be seen that it needs a good deal of space when it grows well, and a fair average shrub might be reckoned as about seven feet in height and breadth. It is one of the worst of all shrubs to move, even when small, as it roots deeply, with almost fibreless roots. It is thus a good shrub to hold its own in dry places near trees, so long as it is not shaded too much.

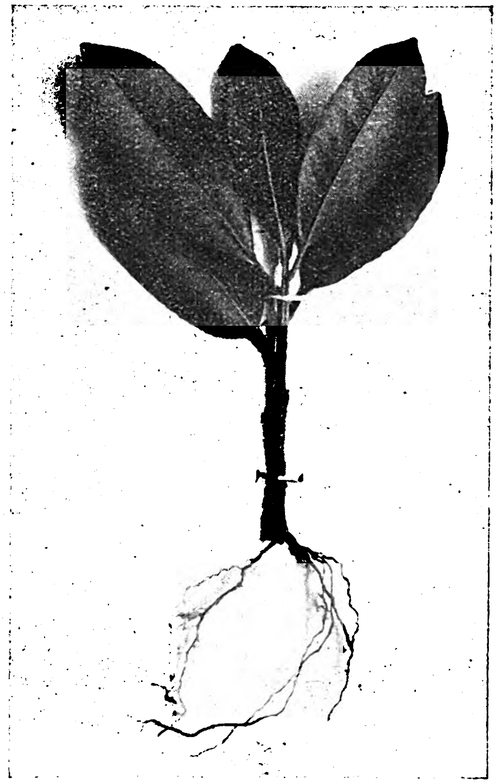

FIG. 90.—A ROOTED ARBUTUS CUTTING.

It flowers on the young growths of the previous summer, so that pruning should be done immediately after flowering, cutting out all the spent wood to encourage the growth of the long, slender shoots for flowering next year. Cuttings may be made of the half-ripened, young growths at the end of July, but are not so easy to root as those of many shrubs, the growths being thin and wiry, and the leaves lacking in substance.

A great authority considers this shrub the best for general garden purposes of all recent introductions. There is one thing against it, *i.e.*, its unsuitability for cutting, but this it shares with Buddleias in general. So far as one can ascertain, it has come through the recent severe frosts without harm. *A. Petts.*

PHYLLODOCE COERULEA.

This is usually regarded as a somewhat doubtful subject, save, perhaps, in the north, but after trying it in various parts of the garden, it has at last become fairly well established. If we cannot always give such plants the atmosphere they ask, something can be done towards the maintenance of that uniform supply of moisture which is essential by providing a retentive vegetable soil. Further, a top-dressing of chopped Sphagnum-moss will afford a taste of moorland conditions, failing which some granulated, fibrous peat-moss may be used. An old specimen of P. coerulea which had not been particularly happy elsewhere was moved nearer the water. But even here it did not show a very bright response until it got nearly smothered by a mass of Parochetus communis. This seemed to give it what it wanted, for it has developed a quite remarkable vigour and health, and has not gone back since its companion was reduced by a necessary thinning.

This little shrub, now about four inches high and nearly a foot across, is much like the rest of the genus in general appearance, but with its lowlier stature goes a blunter leafage and a harder, more stubby growth. The foliage is a medium green, the short, linear leaves being thick and glossy, with a bronzy tint at the tips in winter. The flowers, which sometimes appear so early as May, are borne singly in loose, terminal umbels of three or four blooms. The pitcher-shaped corollas, nearly one-third-of-an-inch long, are a bluish-purple, which hardly justifies the specific name. Still, the colour is an uncommon one in plants of the kind. P. coerulea possesses a special interest in being one of our rarer natives. *N. Wales.*

HOLBOELLIA LATIFOLIA.

This plant, a native of the Himalayas, introduced in 1840, is probably one among many of the good things for which garden lovers have to thank the botanic gardens. It has twining stems and handsome, evergreen, foliage, each leaf composed of three or five dark green, shining leaflets, and raises great hopes of flowers to match; but only short corymbs of small, greenish-purple flowers are produced from the axils of the leaves. The disappointed private owner would promptly discard it, as "of botanical interest only," unless attracted by the delicious scent. Even this may not be always noticeable from a few flowers in cool weather, but once a plant is established it grows rapidly, and flowers freely in a sunny position. We have proved that it is sufficiently hardy for the more favourable parts of the country.

About twenty years ago, a specimen was planted against a south wall, and, as it grew rampantly, it was accommodated with a trellis above it; this proving insufficient, it was next directed by a few strong wires into the boughs of some tall Spruce trees. The plant has now taken complete possession of the trees, almost reaching their tops—a height of sixty to seventy feet; its fragrance, on a warm day in early summer, scents that part of the garden.

According to Mr. W. J. Bean, the fruits are sausage-shaped, two to three inches long, and are eaten by the natives in its country of origin. To secure fruits in this country, however, the flowers should be pollenated by hand. So far as I know, none have been borne by the plant at Nymans.

Cultivation is simple. Small or stunted plants should be grown on in a cool house until healthy and vigorous, and planted outside in April. Good drainage is essential. Where it has space to extend, little or no pruning is required. *J. Comber, Nymans Gardens, Handcross, Sussex.*

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DAVIDIA INVOLUCRATA.

ALTHOUGH the precise number is not known, it is a matter of history that a few rooted cuttings of the first plant of Davidia involucrata raised in Europe in 1899, were sent to this country in the opening years of the century by Mons. Maurice de Vilmorin, from Les Barres. It was stated at the time that there were five or six of these French-raised trees here, and although they had a year or two's start of those raised at Coombe Wood from the seeds sent there by E. H. Wilson in 1900, they do not seem to have reached the flowering stage before the latter. There is nothing remarkable in that, however, because this Davidia is curiously capricious in its flowering, and in some instances seems to make growth at the expense of flowers; the writer has two trees in mind, in different parts of the country, which, to his knowledge, are each twenty years old, yet have not shown any sign of a flower. On the other hand, trees junior to them and much smaller have flowered in several seasons and in many places. The point may, perhaps, turn to some extent on the treatment of the tree, and those which, following the hint originally given to so many by Sir Frederick Moore about fifteen years ago, are kept to a clean stem and a bushy top, seem to flower more often and more profusely than those which grow as they please.

It has not been possible to trace more than three of the French-raised trees, and of these the first to flower seems to have been that in the Himalayan House at Kew. That specimen was received from Les Barres as a rooted cutting in 1901, and at the beginning of May, 1913, it put forth one flower.[*] Twelve months later it bore seven flowers and, subsequently, two fruits. In 1915 it was thirty feet high and carried two hundred flowers. A photograph of it was reproduced in *The Gardeners' Chronicle* soon afterwards.[†] As those interested in these things will remember, this tree flourished to such purpose that it eventually grew so tall that it had either to be let out through the roof of the Himalayan House or suffer removal. Having no option in the matter, the authorities at Kew decided to attempt the transplantation of the tree, and might possibly have achieved their purpose successfully, but for some slight disparity between the size of the ball of the tree and of the doorway through which it had to pass on its way out of the house. As no compromise seemed possible at that time of war-depleted staffs, the necessary adjustment had to be made at the expense of the ball, and if the tree did not long survive the ordeal, it may be doubted if it would have suffered the move in any case. The particular specimen was even then probably taller than any out-of door Davidia is now, and as it was touching the glass of the roof of the house, it was not possible to enjoy the effect of the flowers unless one stood as far off as possible—at the northern entrance door, in fact.

The first recorded instance of the flowering of this Davidia here was in 1911, when a Wilson seedling flowered at Coombe Wood nursery, and considering that Messrs. James Veitch and Sons had commissioned Wilson to journey to western China in search of seeds, it was naturally regarded as an event.

The first of Wilson's seedlings of D. involucrata to flower in a private garden seems to have been that at Aldwick Manor, one of three which Mr. W. H. B. Fletcher planted in 1902, which showed two flowers in 1912.[*] The Aldwick tree, which is the glabrous-leaved form of the type, is as shapely a specimen as anyone could wish to see, and exhibits the suckering habit which is not common to all specimens of D. involucrata. In the following year, Mr. J. A. Christie, of Framingham Pigot, wrote that the tree in his garden was flowering for the first time and had twenty-one blooms on it.[†]

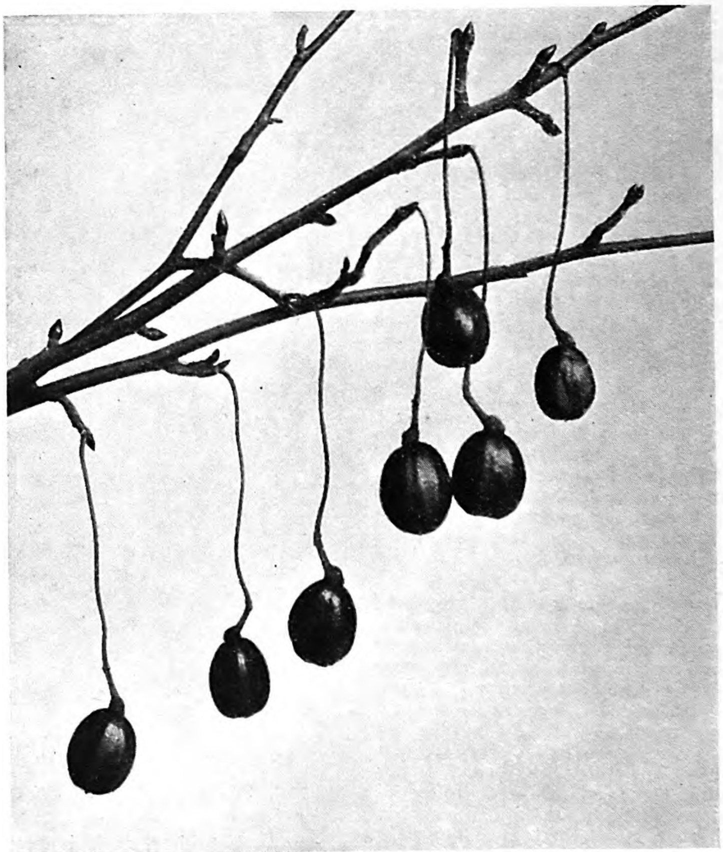

FIG. 91.—FRUITS OF DAVIDIA INVOLUCRATA.

Although a tree of D. involucrata in flower is worth a long journey to see, it is no longer the rare event it was fifteen years ago; the flowering seems to depend a good deal on the weather of the late spring, but whether a cold winter has an inspiring effect on this tree, as it undoubtedly seems to have on some other flowering trees, is not clear. It flowered very well in many places in the hot season of 1921, and only fairly well last year; but then the weather of the late spring of 1928 was exceptionally trying to all vegetation. Although it must have been of comparatively recent date, and probably not before 1915, there does not seem to be any published record of the first fruiting of the tree here. It occurred, however, before a fruiting spray of D. Vilmoriniana was shown at Vincent Square in August, 1914, by the Director of Kew Gardens. A tree in fruit bears a superficial resemblance to a Walnut, and the resemblance is increased by the fact that the fruits (Fig. 91) hang on long after the leaves have fallen.

Although D. involucrata is undoubtedly hardy, so far as winter cold is concerned, gardeners have had to modify their views on the general hardiness of the tree to which expression was given in the earlier editions of *Trees and Shrubs Hardy in the British Isles*. In that invaluable work the view was expressed that, in so far as it was possible to judge at the time (1914), the tree was absolutely hardy: "It starts into growth late, and ripens its shoots in autumn up to the tip—two valuable attributes in regard to hardiness." That view held good until the spring of 1926, when Davidias had a bad time generally. Specimens at Headfort, in Co. Meath, were stripped of their leaves by a frost in early May, and later in the month, the flowers on some trees at Kew were entirely spoiled by the same agency. At the end of April of the following year, the writer noticed that the leaves of a specimen labelled D. Vilmoriniana near King William's Temple at Kew, were on the ground. The frost at the time was no more than a few degrees, but it occurred on three or four successive nights, and came after a warm spell. The frost culminated in a black May Day, and caused wholesale damage, even to trees which we are accustomed to regard as quite hardy. The illustration (Fig. 92) is from a photograph of the well-balanced tree in the garden at Aldwick Manor and was taken by Mr. Fletcher several years ago. As already stated, this particular tree was among the first to flower in England. When Mr. Fletcher measured it on the 15th of last month, he found it was twenty-six feet high and had a thirty-two-and-a-half feet span. The girth at three feet was twenty-eight inches, and an inch or two less at four feet. From ground level to the first branch was seven feet. The notion, which seems to have originated in France, that the fruits of Davidia are edible when bletted like a Medlar, needs verification. *A. Grove.*

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[*] *Gard. Chron.*, May 10, 1913, p. 311.

[†] *Gard. Chron.*, July 17, 1915, Fig. 14, p. 48.

[*] *Gard. Chron.*, May 17, 1913, p. 332.

[†] *Gard. Chron.*, May 31, 1913, p. 371.

LUDGVAN RECTORY.

The recent flood of new Chinese plants which has swamped many gardens and still threatens to submerge us all beneath an apparently inexhaustible deluge of Rhododendrons and rock plants, should not blind us to the fact that, before the Oriental dam burst, other countries had already contributed their quota. So breathless are we at the moment, striving to cope with the Celestial flood, we seem to have forgotten—if we ever knew—that a wealth of first-class plants from the Antipodes has long been established in this country, many of them now being stout bushes or even tall trees. In a few years it may be possible to compare the parvenus of the east with the aristocracy of the south on something like equal terms, when it will be found that the latter lose nothing by the test; in the meantime let us endeavour to keep our sense of proportion, and not entirely lose our heads over the latest débutante! After all, New Zealand, British Columbia and the Andes have long since enriched our gardens, and the interior of China has remained the last storehouse of floral treasures only because temperate Asia has always been the most difficult region to explore.

Unfortunately, the south temperate flora is, in this country, hardy in only a few favoured spots, and although some of the New Zealand and Chilian trees have been known for nearly a century, most of them are quite rare in English gardens.

There is, however, hidden away in the *ultima Thule* of the west country, a small garden of exquisite beauty, where trees and shrubs from the southern hemisphere grow with a will; a garden which fulfils the ideal of a garden which is not a mere museum, so that we may walk round it three times, and see it with new eyes each time. We find that in the wild, of course, noting new plants as many times as you retrace your steps; but in the wild the terrible confusion is too near the surface not to appal even the most superficial observer.

For thirty-five years the Rev. A. T. Boscawen, V.M.H., has cultivated and cared for these plants, every one of which he has himself raised from seeds or from cuttings, and put out with his own hands; and for thirty-five years, under his care, this Cornish garden has increased in beauty of colour and beauty of form, every plant being welded harmoniously into the whole, as though on it alone rested the success or failure of the garden; as, of course, it did!

Ludgvan faces south and west, on a shelf of rising ground a mile from the Atlantic. Although not entirely frost free, its chief enemy is the south-west wind, from which so many of our soft, west coast districts suffer. Nevertheless, the climate is such that many trees and shrubs never seen in the London district, except under glass, are perfectly hardy there; and the Rev. A. T. Boscawen, who has done horticulture invaluable service, can now contemplate a finished and romantic garden with pardonable pride; finished so far as any garden can be finished, although it continues to grow; romantic, because it suggests a tropical oasis springing up in an otherwise rather bare land.

Ludgvan, then, may be regarded as the home of south-temperate plants, including many of the earlier introductions, but including also many which have never been flowered in this country.

No attempt has been made to cut the garden up into departments. The lawn slopes down between belts of trees with outlying Palms striding on to the grass, and here and there a tall shrub marooned. Winding paths thread the massed vegetation, and suddenly the visitor comes on a bulge of rock work overflowing with wide waves of a precious creeper, or descends into a grotto whose angular slopes are plated with metallic foliage. For it is a remarkable feature of this garden, devoted to trees and shrubs, that the very rocks are covered with clinging carpets of woody plants. Among these one notes:—Ficus repens, smallest of Figs; Rubus parvus, a Raspberry which hid itself in New Zealand and has tried to hide its identity ever since; and the Chinese Gaultheria trichophylla, which, although not wonderful in flower, breaks out all over into clouds of large blue berries in the autumn. Others are Coriaria thymifolia, Cyathodes (Styphelia) ricifolia, Styphelia robusta and Ficus procumbens. A few of the rock plants, however, erupt into violent colour, and the large, sessile discs of Heeria elegans, for example, daub a whole rock face with vivid magenta.

A group of rare plants—rare, or even unique in this country, at any rate—grow beneath the shadow of a wall. On the wall itself Epacris miniata dangles its dancing clusters of Venetian-red, glassy tubes (the rim frosted white); this is a much better way of growing so elegant a plant than all scrabbled up on the rock garden, when the leaves completely hide the flowers. There is also E. microphylla. Those who know Pentapterygium serpens only as a greenhouse plant would be astonished to see it here, six feet high, its numerous, arching sprays fringed with pointed flowers. Knightia excelsa, twenty feet high, far overtops the wall, but in New Zealand it attains a hundred feet; its first flowering in this country is eagerly looked forward to. A low bush of Bauera rubioides, from Australia, dangles a wealth of rosy-purple, shell-like flowers, and against the wall the twisted, white-enamel corollas of Styphelia tubiflora glimmer in starry figures over a huge, crouching bush of Philesia buxifolia.

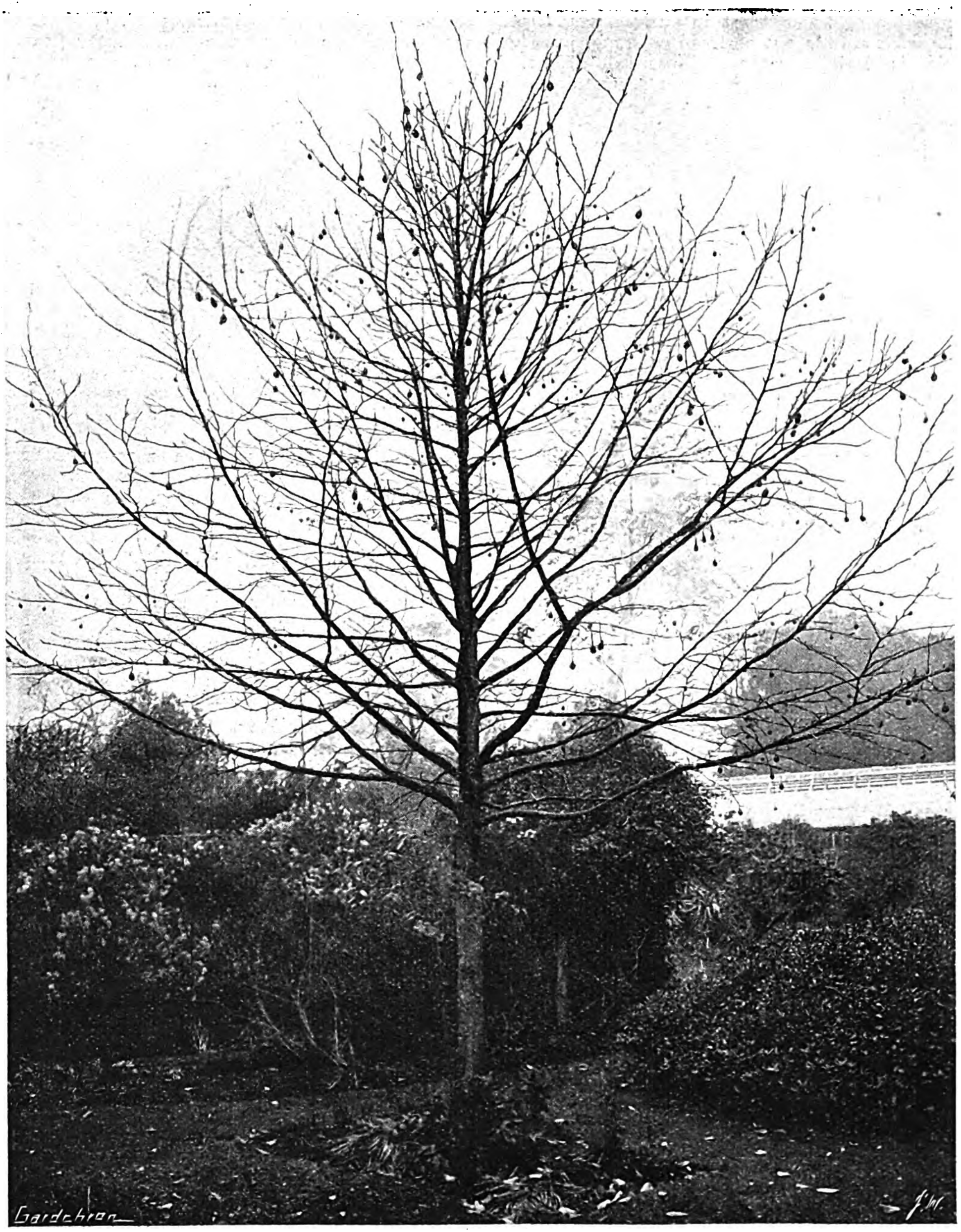


FIG. 92.—DAVIDIA INVOLUCRATA.

A fruiting specimen of the glaucous-leaved form at Aldwick Manor, Sussex. Planted November, 1902.

The house walls are entirely covered with climbing plants, one of the finest being Passiflora mollissima, whose great, pinkish flowers hang clear of the foliage. Mutisia Clematis, which has grown up stoutly at the angle, has embraced two sides in a curtain of silver from among which, on one side, ripple out emerald-green splashes of Ruscus (syn. Semele) androgynus, in arched waves. On the other flank, an orange-flowered Bomaria skirmishes, and Fuchsia cordifolia has the remaining space allotted to it.

A fine variety of Phormium tenax is grown, the leaves being twice the width of the type; two great clumps of this handsome plant flank the lawn. Near-by, a regular rocket of Yucca bursts into a cloud of cream stars, which hang over a mound awash in an eddy of dwarf Veronicas, such as V. Willcoxii, V. elliptica glauca and V. Astonii.

August-flowering trees are valuable, particularly in the west country. A magnificent bush of Clethra arborea, is twenty feet high and as much through; and there are two large, columnar trees of Hoheria populnea; several slender pillars of Eucryphia cordata; the quaint-leafed Myrtus bullata, Plagianthus (syn. Gaya) Lyallii, and a bulky bush of Olearia oleifolia, all bloom during the eighth month; and much colour is added by the shrill gamboge of Calceolaria integrifolia, the scarlet of Fuchsia triphylla, Gladioli, Oenotheras and various Heaths. Among these last are double Ling, double Bell Heather, and the fine form of Erica vagans discovered by Mr. P. D. Williams, *i.e.*, var. kevernensis.

But flower colour is only one of many chords which go to make up the harmony of Ludgvan; beauty of foliage is another. There are numbers of handsome foliage trees, many of them upwards of thirty feet high; and somehow their blues and greens and reds and silvers have been made to combine or to contrast in such a way that, while each stands out as from a frame, yet the whole is knit together. Beautiful are the Pittosporums, P. tenuifolium and P. eugenioides; others include P. Dallii, P. Kirkii and P. Buchanani. Nothofagus fusca, thirty feet high, and smaller plants of N. Dombeyi and N. Cunninghami, all have both colour and quality; and such as Podocarpus Totara, forty feet high, Aralia japonica, Pseudopanax crassifolium, P. arborea, the 'Ake,' (Dodonaea viscosa), in fruit, and a huge bush of Eupatorium Weinmannianum, in full bloom, make a very agreeable impression.

Many Olearias of large size are to be seen here, and as those flower late, they are of peculiar value, although so handsome is their foliage that they are worth their place at any season. The original plant of O. semidentata, from which nearly every specimen in the country has sprung, is here, and a fine bush of O. oleifolia, fifteen feet high, is massed with flowers in August. The large, flannelly leaves of O. insignis are most attractive, and rare species include O. Colensoi, O. furfuracea, O. Traversii, O. nitida and O. macrodonta. There is a dwarf form of this last, called O. macrodonta var. minor, with tiny leaves, growing but two feet high, at home in the rock garden. But the most interesting species of all is O. lacunosa, perhaps the only specimen in the country, certainly the biggest, although it is but three feet high, and has never yet flowered. It has long, narrow leaves, glabrous above, but covered below with ferruginous fluff, suggesting some breed of Rhododendron, and quite unlike those of any other Olearia.

For sheer brilliance of colour there is probably nothing to compare with the 'Ratas' (Metrosideros) of New Zealand. Flame Trees, they are called, and deserve to be. Imagine a big forest tree alight from top to bottom with blazing scarlet flowers—even the Gold Mohur pales beside the Australian Flame Tree. At Ludgvan, several species are grown, some of them reaching thirty feet. Metrosideros lucida, the Mountain Rata, has charming foliage; others are M. robusta, M. tomentosa, which is the Christmas Tree of Auckland, and the scrambling M. diffusa, which has not yet flowered.

The exotic appearance of this amazing garden has already been remarked upon. On every hand the visitor is greeted by Palms, such as Phoenix canariensis and Chamaerops Fortunei; tall Dragon Trees, such as Cordyline indivisa, or the squat C. Banksii; and Tree Ferns, chiefly Dicksonia antarctica, aloof, or thrusting themselves up through the tiers of coloured trees and bushes. But who would ever have expected to see a Mangrove growing in an English garden! Griselinia littoralis, a tree thirty to forty feet high which comes from New Zealand, is no less; and G. lucida, which in its native island is usually epiphytic, growing like certain Malayan species of Ficus, is much the same size, and is an invaluable wind-break.

The Wattles comprise a vast number of species, graceful both in flower and foliage; at Ludgvan they help to leaven the dense boscage with their fairy freshness. They include Acacia dealbata the Silver Wattle, A. Baileyana, A. melanoxylon, A. armata and A. retinoides.

To beat back the 'sou'-westers,' a wall of Pinus insignis has been planted, and an almost continuous barricade of trees surrounds the garden; but wind or no wind, one glimpse of the sea is permitted through a green glade, with a fair view of St. Michael's Mount swelling like a gigantic bubble from the restless ocean. The ground slants away steeply here, with a pile of rock in the foreground, over which the queer Restio subverticillatus waves its grass-like plumes.

Brachyglottis repanda is a large and handsome tree, with remarkable leaves; and the New Zealand Red Pine, Dacrydium cupressinum, although only twelve feet high, is a handsome stripling. Corokia buddleoides, Leptospermum scoparium var. Chapmannii, Cytisus fragrans, Osmanthus armatus, Ilex insignis, Callistemon floribunda, Elaeocarpus dentatus, Hakea suaveolens, and the white-flowered H. elliptica, Beaufortia decussata, Weinmannia trichosperma and W. sylvicola are other interesting plants.

Hedges of Escallonias and Fuchsias overshadow the paths; among the latter are F. serratifolia, and the tree species, F. excorticata, while over one of the rock hummocks flows a mass of the dainty, creeping F. procumbens, embroidered with coral-red fruits. So thickly do these rock plants grow that it is exceptional to see any rock exposed; and in addition to the species mentioned one notices Helichrysum Bidwillii, Phyllocladus alpinus, the 'Celery Pine,' and the South African Diosma (Adenandra) uniflora and D. gracilis.

Perhaps the biggest trees in the garden are the various species of Eucalyptus, which grow very fast. Although the stringy bark which flutters from their trunks gives them a somewhat untidy appearance, they are fine trees, and can withstand wind. Eucalyptus Globulus, scarcely thirty years old, is already a hundred feet high! E. pulchellus is fifty feet; and E. cordata, which has the bluest leaves of any, is thirty feet. Other species are E. ficifolia and E. coccifera.

Clethra arborea has been mentioned, and there is also C. alnifolia; while besides several plants of the two common Eucryphias, E. cordata and E. pinnatifolia, there are specimens of the much rarer E. Moorei and the charming E. Billardieri. The Myrtles include Myrtus Ralphii and M. obcordata. Gordonia anomala is perfectly hardy, as are Candollea cuneiformis, Nandina domestica, Aristotelia racemosa and Melicytus ramiflorus, the two latter growing thirty feet high. In places, the wealth of plants recalls the jungle, as where Sophora tetraptera and Cotoneaster horizontalis have become bound up with the long, Reed-like stems of the climbing Rubus australis. Those who labour under the delusion that all our finest introductions came from the east, should correct this view by studying the southern flora, as grown at Ludgvan! *K. W.*

NOTES FROM EDINBURGH.

It is too soon to estimate how much damage has been done by the recent frost, for although a burnt trail has been left, it may be that some plants, trees or shrubs which have had their leaves scorched, may not suffer any after effects. It is to be regretted, however, that a few have been damaged so severely as to be beyond recovery or, at least, they will carry permanent disfigurement. These are in the minority, but must be counted in the yearly casualty list. In some instances, trees such as the Sweet Chestnut (Castanea sativa) have had their bark and wood split open by the action of frost. Some of the perpendicular frost cracks or rents are large enough to admit of one's finger. Erica australis, too, is another unfortunate sufferer, as many plants of this species have had their bark entirely peeled off, which gives the plants the appearance of attack from rabbits. Others, for example Osmanthus Fortunei, have escaped with a severe scorching of the leaves and branch tips. Fortunately, there were few shrubs or plants in flower during the severe cold spell, but of tho few, nearly all of them suffered more or less damage.

Rhododendron moupinense was denuded of its beautiful white flowers during the first few hours of frost. The precocious R. mucronulatum arrayed in its soft-pink-coloured flowers and, to some extent sheltered by surrounding trees, despised the vagaries of the weather at first, but had to yield to the ever falling temperature; the transformation which took place in so short a time from a thing of beauty to a bundle of leafless and flowerless sticks was amazing. The flowers of R. parvifolium also suffered and, likewise, its companion Daphne Mezereum lost what flowers it had. Even Daphne Blagayana, close to the ground, had its first buds scarred and only escaped complete disaster by having its bud-scales intact. The beautiful Viburnum grandiflorum, claiming rank with the very early flowering shrubs, had no chance whatever; the delicate pink trusses of flowers succumbed after two nights' frost. Near-by, however, in a similar aspect, Hamamelis japonica var. arborea withstood the test. As usual, its golden mantle of yellow flowers seems to defy all frosts.

In the rock garden, plants of Primula Winteri under their glass protection looked very sickly after three days of frost. Many fully-opened flowers at the outside edges were nipped, but the remainder, so soon as the thaw set in, returned to normal, and will produce an abundance of good blooms during the present mild weather. The peeping buds of Scilla amoena and Muscari alpinum var. praecox are to be admired in corners in the shelter of the overhanging rocks. They will unfold their bright blue flowers in a few days, adding their little bit of colour and brightness during the remaining quiescent period. Eranthis cilicica, a Winter Aconite, one of our prettiest early spring gems, is much in evidence at present. Scattered individuals of a group of this species are appearing like miniature Toadstools. They stand erect, with golden-yellow, cup-shaped flowers surrounded by a whorl of pointed, green sepals.

Helleborus viridis and H. corsicus are endowed with constitutions to withstand severe weather. They bloom and flourish at this time like the Snowdrop and Leucojum. Shapely plants of Erica carnea var. Winter Beauty on a mound facing south, have lost none of their attractiveness. Their glorious hue has made them conspicuous and they have been admired for many weeks past.

The Crocus family seems to have shaken off any bad effects of frost. Species such as C. aureus, C. chrysanthus, C. biflorus and its variety Wildenii are wonderfully pretty.

During the hard spell of frost there was very little snow to give protection, and many plants would have been benefited by its presence. The gradual seven days thaw has now been followed by a fall of two inches of snow. This will give the necessary blanket to the many flowering subjects mentioned, should frost again assume its recent degree of keenness. *A. McCutcheon.*

FLORISTS' FLOWERS.

BORDER CARNATIONS.

In glancing through past lists and records, I was struck by a fact which cannot be denied, *i.e.*, the large number of varieties exhibited which were sent out years ago, and which keep their position in spite of novelties—stated, in many instances, to be improved forms of these varieties—which appear, and then often disappear very quickly, or at the best, subside into the background.

This cannot be because there are no novelties of a stirling individual character put into commerce, for although one does not expect every variety sent out to be of exhibition form, there are always some that are outstanding, and one might reasonably suppose amateurs would welcome an opportunity of trying newcomers which have, besides merit, variety in markings and shades. But at least two or three seasons elapse before a really good sort comes under general notice, the majority of amateurs preferring to wait and see how the novelties behave in the hands of the few who are always willing to pay for them. While certain of the older varieties are still unique in colouring, another great factor is the persistence with which seasoned amateurs stick to them, and the pardonable conceit some of them have in the manner they are able to show, year after year, blooms which the younger generation would not know how to grow to such perfection, for there is no doubt that many varieties do require understanding; of these, mention need only be made of Pasquin, Elizabeth Shiffner and Queen Eleanor.

The first-named is probably still the loveliest yellow-ground Fancy in commerce (the only one to bracket with it being Lieut. Shackleton) and appeared in 1908, the other two being introduced in 1910 and 1911, respectively. That Pasquin is difficult, even under glass, is admitted, and Elizabeth Shiffner will look entirely unlike itself if the unique colouring is not secured; while Queen Eleanor has such a weak neck that, although it was acclaimed when first sent out, it has almost entirely ceased to be grown, except by expert Carnationists, who know what a really beautiful show Carnation it can be; one good point in its favour is that it is an extraordinary grower in light loam in the open border, making a huge plant if left unchecked, and giving abundance of blooms. It is, however, liable to split its calyx.

One other old variety I should like to mention is Edenside. Appearing in 1913, no other Border Carnation is quite like it, and although still listed, it is now very seldom seen. That it is somewhat difficult is again, possibly the reason for its scarceness, while, some also assert the calyx is weak, but, like Linkman, it should not be discarded until a strong variety of the same colouring takes its place. Incidentally, there is a novelty named Linkboy now being sent out, which, it is confidently asserted, will sweep Linkman into the background. Linkman has a weak neck and stem as its chief drawback, but Linkboy will have to justify its reputation very completely as to stem, form and colouring, before the old favourite is ousted, one of its greatest assets being its excellence on the open border. A stronger grower of this type would be very welcome, however, as it is alone in its particular shade.

Three other novelties which I have not previously noted are Corinthian and Florence Welstead, white-ground Fancies, and Allan-a-Dale, yellow ground. The first-named is lightly marked and fringed with crimson-scarlet, the colour forming a solid edge around the petals, which are slightly cupped, although this does not always detract from the appearance of its blooms. Its companion, a large bloom with broad petals, is marked with light scarlet, and I was much taken with it when, exhibited last summer as a seedling, it secured first prize. Allan-a-Dale I have not seen, but the ground is stated to be deep yellow, with light markings of bright scarlet and maroon. It is stated to have the same massive proportions as Edenside, a strong and compact habit of growth, and is very floriferous; it appears to be an exceedingly attractive variety.

Although the severity of the weather will no doubt cause some losses, the Border Carnation, either in pots or the open border, if healthy and well-rooted, reacts very quickly, and frozen plants come out of the ordeal and start growing so soon as climatic conditions permit. Some very fine and reliable Fancies for general purposes have been sent out during recent years, but very few first-class Selfs appear, as is evidenced by the blooms exhibited, few being of very recent introduction, except, perhaps, Joan Wardale.

Snowflake is the almost universal white, and Bookham Scarlet, Mary Murray, Gordon Douglas, still one of the best; Joan Wardale, Roderic Dhu, Effie Deans, E. Shiffner, Mrs. P. Smith, Bookham Rose, Peach Blossom and Yvonne Thomas, appear with monotonous regularity. Cockatoo, a beautiful variety, is now becoming better known, and the new scarlet Regina is magnificent in the border, but apart from some other of the stirling older varieties, those mentioned are practically ubiquitous in the south. Shirley Surprise, Shirley Coral, John F. Woolman and Leslie White, are all good for both border and exhibition purposes, the last-named being a fine rose-coloured sort. Although there are so many claimants to the title of "finest" among white ground Fancies, it would be impossible to state which one should bear it, and it would take us back very far in the matter of introductions, for Mrs. Hanksbee and Fair Ellen are still in the running, and in spite of two or three improved varieties, many consider Mrs. G. D. Murray unsurpassed. When one considers that since Mrs. E. Charrington was introduced there have been Mrs. F. W. Seymour, Mrs. J. Fairlie, Yenton, Esme Murray, A. St. Clair Amos, Flora McIvor, Evelyn White and Bookham Beau, among other excellent varieties, it must be confessed that individual taste will always exercise the casting vote, the same form and colouring not appealing to all.

The autumn of 1922 gave us Highland Mary, which entirely replaced Loveliness and Viceroy, and no yellow ground Fancies have surpassed them up to date. The last was a good season, several standard varieties being sent out, among them Dr. Connor, with unique markings and a splendid seeder. I should select Clio, Endymion, King's Jester, Flamingo, Idwen, Ivan Lowe, Doreen Woolman, Mrs. H. Lakeman and William Preston, M.P., as new varieties which stand out and are good growers. I admire Chieftain very much, but its "grass" is somewhat difficult to handle. I have not included Florence Grisby, as I want to try it over this winter, but I hope it will maintain its reputation and become a standard variety.

There are certain older varieties in this class, which, while maintaining their position, might very profitably be grown to a greater extent. Kathie Moore, for instance, is a lovely flower, and good for the border, as also are J. J. Keen, J. Saville, Peace Treaty and Shirley Fancy, which has a very lasting bloom, prettily marked. I am giving Radio attention, as its habit of growth is good, and the colouring, somewhat after the style of Highland Mary, not overdone.

Fancies continue to make headway, and fresh classes are being inserted in schedules in order to bring them into further prominence. Breckenborough Hall, sent out last season, seems to have inspired more interest than most novelties, probably because of its colouring, allied to a strong Clove perfume, and robust constitution. It should tone well with its parent, Mrs. A. Brotherstone.

Ebor is a fine variety, worthy of all praise, and stated to be an improvement on The Cadi. As the colouring is different, and the latter is almost perfect in shape and constitution, this description of Ebor is rather misleading. Ebor is, perhaps, a larger flower, but there is room for both these lovely sorts, and no one having grown The Cadi will willingly discard it. To complete a trio of similar shading, I add Verdun, which will give perfect blooms.

F. W. Ransome is shapely, and seems as if it would be a reliable variety in regard to fixity, but Albert E. Amos, with its occasional red ticking, is very often a rose Self, the marking being entirely absent. This sporting cannot be eliminated altogether, particularly where the markings are of a very slight nature, but a variety should not be discarded on this account, as the layers from any plant may produce blooms perfectly true to type.

I have been receiving many enquiries as to the cause and prevention of stem-rot, a disease which is playing havoc with Carnations in certain districts, many midland growers suffering from it severely. The trouble is that there is no agreement as to its origin, but the soil must undoubtedly be the first consideration. A correspondent who deprecates the use of calcium oxide as being too caustic in its action, finds that calcium carbonate, finely distributed, has a most beneficial effect on the plants, enabling the soil to be quite reasonably enriched in humus and chemical foods without deleterious consequences, both necessary if the large flowers, which are called for at present, are to be produced successfully. As he points out, the Dianthus family originally came from rocky areas, where the drainage is good and the soil poor, and it is obvious that, while cultivation calls for the application of stimulants, fundamentally, the soil and conditions of growth must approximate, so nearly as possible, those of the original stock. This, of course, is feasible, but in my own opinion, it must further be seen that where varieties, however healthy originally, are grown on repeatedly, and layered in a too acid soil medium, arising from continued over stimulation, particularly chemical, weak stock must inevitably result, which cannot resist a disease arising, as it does, from the very food on which the plant depends. This, I believe to be the principal cause of stem-rot. In layering, too, sand which is overcharged with iron, or fine sand used to excess, which packs close and thus causes insufficient drainage and a sour soil, is often the primary cause of a hardening at the joint, especially if the layers are left in this medium too long after becoming well rooted. If the soil into which they are transplanted is not compounded carefully, or if peat or leaf-mould is included, which over-feeds and debilitates the plants, disaster is bound to occur if pests of any kind attack, as there is not sufficient resistance in the constitution of the layers to withstand disease, especially where the parent plant has been stimulated beyond its powers in order to obtain abnormal blooms, and has no superfluous energy with which to help its offspring.

Old mortar-rubble is, without doubt, one of the finest materials to incorporate in any soil for Carnations; it can do nothing but good, and with it very little sand is required. My own soil is light, and consequently I use very little lime (calcium oxide), but I do advocate a free use of freshly-ground oyster shells. It greatly adds to the beauty and sheen of the petals, and seems to supply a want that no other form of lime does. Every Carnationist has some different method of procedure, but the most successful in the long run are those who grow their plants in a clean, healthy compost, without undue coddling, or over stimulation, either chemical or organic. *J. B. Wells.*

THE GENUS PRIMULA.

(Continued from page 166.)

LEUCOPHYLLA (Pax). Milk-leaved P.
(Vernales.)

This perennial species somewhat resembles the Oxlip in flower. It produces a tuft of rugose, rather leathery leaves, with oblong or elliptic, blunt blades, tapering to a narrowly-winged stalk about equalling the blade in length, in all one-and-a-half inch to three-and-a-half inches long; margins nearly entire or bluntly toothed; underside covered with whitish wool. Flower stem nine to ten inches tall, downy when young, smooth when in fruit, bearing an umbel of numerous pale yellow blossoms. Corolla about three-quarters-of-an-inch across, divided into five broadly heart-shaped, cleft lobes; tube cylindrical, but little longer than the calyx. Introduced in 1896.

Grows in mountain limestone pastures, in the eastern Carpathians and the Caucasus, up to 10,000 feet above sea-level.

Var. longipes (Pax). In this form the margins of the leaves are crisped and crenulate. Eastern Carpathians.

Var. Ruprechtii (Pax). The margins of the leaves of this variety are minutely crenulate-dentate or nearly entire. Caucasus.

Culture: As for P. elatior, with the addition of limestone to the compost.

LEUCOPS (W. W. Sm.). White-eyed P.
(Nivales.)

A desirable, minute, deciduous perennial species, with a dense tuft of narrowly lance-shaped, pointed leaves, half- to one inch long gradually tapering to an indistinct, winged stalk; margins revolute, nearly entire or edged with obscure, rounded, regular teeth; upper surface more or less smooth, underside coated with yellow meal. Flower stem one inch to two-and-a-half inches long, slender, bearing an umbel of two to five fragrant, lilac, mauve, or purple blossoms, with a white eye. Corolla nearly flat, about half-an-inch across, with sub-rotund, entire lobes; tube cylindrical, dilated upwards, about half-an-inch long. Flowers from May to July.

Grows in open alpine pastures and on mountain slopes at Gujala, in the Muli district of south-western Szechuan, at 15,000 to 16,000 feet above sea-level.

Var. anopa (Hand.-Mazz.), has leaves hardly half-an-inch long, coated on the underside with white meal; north-western Yunnan, at about 14,000 feet above sea-level.

Culture: Plant both the species and variety in good rich loam in an open, damp spot, and afford protection from damp in winter.

LHASAENSIS (Balf. f.). Lhasa P.
(Obtusifolia.)

This plant is possibly but a microform or sub-species of P. Jaffreyana; it has a short, thick rootstock which produces a rosette of oblong-spathulate, pointed leaves about three inches long, with somewhat cartilaginous margins furnished with unequal, sharp teeth; upper surface gland dotted, underside more or less covered with yellow meal; the blade tapers into a short, winged stalk, dilated and sheathing at the base. Flower stem about six inches tall, erect, more or less mealy above, bearing an umbel of four to eight violet blossoms on erect, slender, sparsely mealy stalks, about one inch long. Corolla about five-eighths-of-an-inch across, divided into five broadly wedge-shaped, very deeply bifid lobes; tube narrowly cylindric, slightly dilated upwards, with a delicate ring in the mouth. Flowers in August.

Grows on hill-slopes near Lhasa, in Tibet.

Culture: Fibrous loam and limestone chips, in damp, but well-drained, open situations, is indicated.

LICENTII (W. W. Sm.). Abbé Licent's P.
(Malacoides.)

An extremely interesting species, the most northern member of the group to which it belongs; it has a slender rootstock which produces a tuft of numerous spathulate or broadly lance-shaped, membranous leaves, wedge-shaped at the base, not heart-shaped, gradually contracted into a narrowly winged stalk more or less equalling the blade in length, in all about three-quarters-of-an-inch long; margins edged with coarse, irregular teeth; both surfaces clothed with very minute, meal-producing hairs. Flower stem about six inches tall, bearing one or two superposed umbels of four to seven lilac blossoms on slender, sub-erect stalks, half- to three-quarters-of-an-inch long. Corolla about five-eighths-of-an-inch across, with heart-shaped, notched lobes; tube cylindrical, about five-eighths-of-an-inch long. Flowers in May. Not in cultivation.

Grows on the mountains in the Province of Shan-si, in northern China.

Culture: As for P. Forbesii should suit this species. It should prove perfectly hardy in cultivation.

LICHIANGENSIS (Forrest). Lichiang P.
(Cortusoides.)

A hairy, perennial sub-species of the variable P. polyneura (Fr.), with a tuft of oval leaves from two to five inches long, heart-shaped at the base, borne in hairy stalks two to six inches long; margins divided into numerous rounded lobes; both surfaces hairy and strongly veined. Flower stem six to fourteen inches tall, slender, hairy, flexuous, bearing loose umbels of fragrant blossoms varying from light rose to nearly crimson, on fairly long stalks. Corolla about five-eighths- to one inch across, flat, divided into five heart-shaped lobes; tube cylindrical, longer than the calyx. Flowers in June and July. Introduced in 1908. *Gard. Chron.*, Suppl. Illus., December 30, 1911.

Grows in somewhat shady places on limestone cliffs and boulders, on the eastern flanks of the Lichiang Range, in north-western Yunnan, at 10,000 to 13,000 feet above sea-level.

Culture: Good loam and leaf-soil, in a well-drained shady spot, suits it best.

LIMBATA (Balf. f.). Bordered P.
(Nivales.)

A handsome, deciduous, perennial species with short, scaly resting buds coated with white meal and tufts of somewhat leathery, narrowly egg-shaped, pointed or blunt leaves, tapering to a hardly distinct stalk, in all from two to four inches in length; margins furnished with sharp, uneven teeth as though gnawed by insects; both surfaces coated with grey or white meal, underside densely so. Flower stem stout, rather more than nine inches tall, slightly mealy upwards and bearing a many-flowered umbel of fragrant, violet-purple or purplish-blue, grey-eyed blossoms on slender, short stalks; the purple calyx is also sprinkled with white meal. Flowers in June and July.

Grows in open, moist, stony pastures, or on the damp ledges of cliffs, on the mountains of the Mekong-Salween Divide, at about 9,000 feet above sea-level.

Culture: Grow it in good fibrous loam, in a damp spot, and afford protection from severe frost.

LIMNOICA (Craib). Mud-loving P.
(Denticulata.)

A beautiful member of the P. denticulata group, with a rosette of somewhat membranous, sub-erect, lance-shaped or oblong-lance-shaped leaves, broadened and bluntly rounded at the tip, tapering at the base into rather narrow, winged stalks, in all about three inches long; upper surface more or less smooth, underside sparsely mealy, margins furnished with sinuous teeth which are minutely toothed. Flower stem six to twelve inches tall, stout, covered with yellow meal towards the top, bearing a head of lavender-blue blossoms. Corolla about five-eighths-of-an-inch across, divided into five rounded, bilobed segments; tube cylindrical, about three-eighths-of-an-inch long. Flowers in March and April. This plant, according to Professor W. Wright-Smith, is a sub-species of P. alta (Balf. f.). In cultivation in 1922.

Grows in wet soil on the banks of streams and also in drier situations on hillsides, in Upper Burma, at 7,000 to 9,000 feet above sea-level.

Culture: As for P. denticulata.

LIMPRICHTII (Pax et K. Hoffm.). Limpricht's P.
(Petiolaris-Davidii.)

A handsome, perennial species with a rosette of sub-orbicular or rounded-oblong, dark green, somewhat leathery leaves two to four inches long, heart-shaped at the base, borne on distinct stalks about half the length of the blade and densely covered with reddish down; margins furnished with shallow, obscure, rounded lobes; upper surface non-mealy, dark green, bullate, underside clothed with short, stiff hairs. Flower stem two to six inches tall, downy below, smooth upwards, bearing an umbel of two to six reddish-purple blossoms, on smooth stalks, half- to three-quarters-of-an-inch long. Corolla from one to over one-and-a-quarter-inch across, with broadly heart-shaped very deeply notched lobes; tube cylindrical, longer than the calyx. Flowers in April. Not in cultivation.

Grows in Bamboo thickets near Kwan-hsien, in southern Szechuan, at from 7,500 to 8,000 feet above sea-level.

Culture: Good rich loam and leaf-soil, in a cool shady spot, with protection from severe frost in winter, are the conditions indicated.

LISTERI (King). Lister's P.
(Obconica.)

This deciduous, perennial species has a somewhat stout, woody rootstock and a tuft of very thin, rounded leaves one inch to two-and-a-half inches across, heart-shaped at the base, borne on very slender stalks, one inch to three-and-a-half inches long, usually covered with short down; margins lobed, lobes toothed or entire, pointed; both surfaces more or less covered with very fine, short hairs. Flower stem one to eight inches tall, slender, downy, bearing a loose umbel of three to eight blossoms of a rose-pink, rose-lilac, or lavender colour, or, at times, pure white. Corolla five-eighths- to one inch across, nearly flat, divided into five egg-shaped, bilobed segments, entire or toothed at the tip; tube cylindrical, longer than the calyx. Flowers in March and April. Not in cultivation. *Gard. Chron.*, Suppl. Illus., November 20, 1909.

Grows in Bamboo jungles, in limestone pastures, and on cliffs in thick moss, mostly in moist places, in shade, ranging from the Sikkim Himalayas eastward to the Tali range of Yunnan, reaching an elevation of 10,000 feet above sea-level.

Culture: Grow it in good loam, leaf-soil and limestone chips, in a half-shady spot, with an abundance of water when in growth. *A. W. Darnell.*

(To be continued).

POTASH NOTES.

Old observations are often lost to sight, although sometimes not without interest; occasionally, if adequately inaccurate, they may become immortalised by being handed on from text-book to text-book. The article on manures (Wurtz, *Dict. de Chemie*, 1868) recounts trials of potash manuring, with cereals, etc., wherein there was a crop reduction; someone had stated that potash would increase sugar, so several lots of Beet were tried. There was, indeed, an increase of sugar per plant, but the reduction of crop about equalised matters to that of the control. Tobacco came out better; potash starvation gave a leaf which would not burn well and yielded a black ash, but with potash manuring, good burning and a white ash resulted. Someone thought that potash would help to stop Potato blight, but trials showed that as many or even more rotten tubers came from the potash-treated, clamped Potatos as from the controls.

Coming to modern times, a remarkable claim is made (*Pomologie Française*, May, 1928, p. 111) for potash as an agent against the cockchafer grub (the *ver blanc du hanneton* which causes so much damage in France). It is stated that the application of sylvinite (chloride of potash) in February has a great effect, and although all the larvae may not be destroyed, it causes survivors to bury themselves deeply beyond the young roots of the seedlings. A patch of Wheat treated at the rate of 300 k. per hectare (about 2½ cwts. per acre) was not attacked by the mole cricket, although neighbouring patches were decimated; another trial on Wheat where the *ver blanc* was concerned showed that doses of 600 to 800 k. (5 cwts. to 7 cwts. per acre) were efficacious, and the grubs were found mummified in numbers. In a commune in Switzerland, it was reckoned that if all the hay area were treated, another half-ton per acre of hay would be saved from the cockchafers, and give food for another eighty cows, which would produce 15,000 litres of milk (say 3,300 gallons).

Similar results are claimed for kainit, which is more commonly marketed here. Strong solutions applied to the bark of fruit trees in winter are said to destroy both animal and vegetable enemies; even a twelve per cent. application seems to have nearly eliminated woolly aphis; five per cent. was used on the Currant or Gooseberry (*Groseille*). So far a veritable apotheosis of potash! for the potassic element is claimed to be the active partner but, finally, attention is given to the good effects of common salt (sodium chloride) on various fruit trees (Apple, Pear, Fig, Pomegranate, etc.), especially in improving flavour; the trees may safely be watered with one to one-and-a-half per cent. solution. The question may arise as to whether we pay sufficient attention to chlorides in applying artificial manures. As regards sodium salts, a short abstract from the *C. R. de l'Acad. des Sciences*, by MM. G. Rivière and G. Pichard (*Pomologie Française*, January, 1929, p. 5), states that experiments with carbonates of soda, potash, lime and magnesia resulted in better cropping with the soda salt than with any of the others—presumably fruit trees were tried.

Reverting to potash, mention may be made of the East Malling trials in respect to leaf-scorch on the Apple; the tables given by Mr. Grubb (*Jour. Pomol. and Hort. Sci.*, Vol. VII, 1928) of estimated percentages of affected leaves with and without potash manuring, are of interest. The figures are variable and in no case show a diminution to zero even after four successive years' application of potash. When we see that even after this history, Lord Derby Apple showed sixty-five per cent. scorched leaves (Table III) or Allington Pippin fifty-four per cent., a direct connection between potash and leaf-scorch is scarcely to be maintained.

Countervailing ideas are acceptable on this and the other side of the Channel on the two conditions—leaf-scorch and silver-leaf. Here we consider silver-leaf is due to Stereum purpureum; in France they consider this a very common fungus, which is usually not to be seen on silver-leafed trees; there they consider leaf-scorch is due to Cladosporium herbarum, which we regard as a very common fungus, and consider that leaf-scorch is not due to the presence of parasites.

Noteworthy was a wide-spread attack or prevalence of leaf-scorch (*brunissure*) all over the north of France in 1888 (a year following the hot, dry year of 1887) which attained *proportions extraordinaires*, so that, especially on Apple trees, all leaves were completely dried up on the trees by the end of July. It was then concluded that Cladosporium can attack the leaves of a large number of plants, notably of the Apple; here, in England, it still only attains the elegance of a saprophyte. So far, the fashion of the times for "virus" diseases has not yet clothed leaf-scorch—perhaps it may—*Quien sabe? H. E. Durham.*

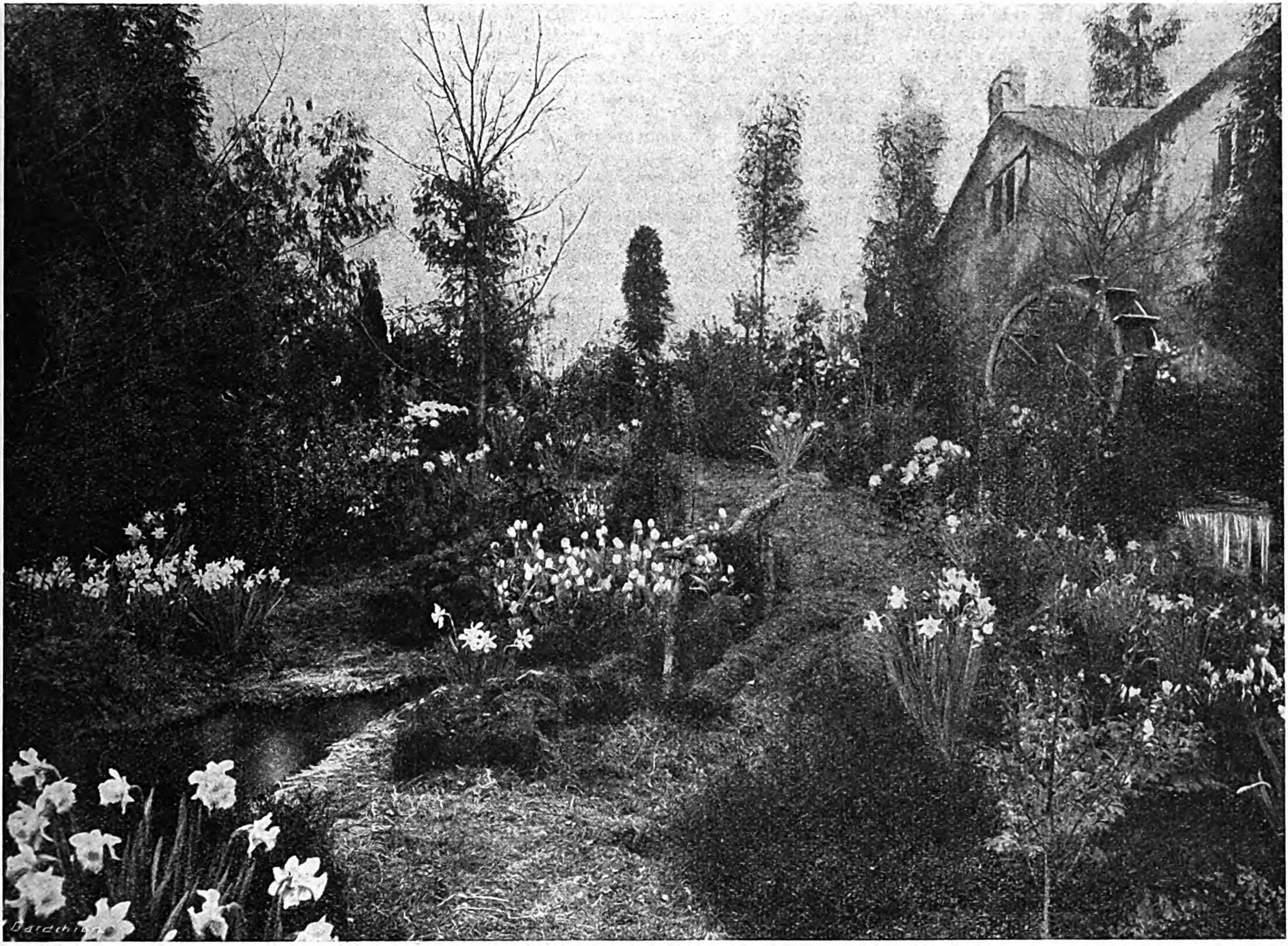


FIG. 93.—MESSRS. JAMES CARTER AND CO.'S OLD MILL GARDEN.

THE IDEAL HOME GARDENS.

THE gardens at Olympia, in connection with the Ideal Home Exhibition, have become an institution so popular that, although there is an extra charge for admission to the Annexe, there is often a greater proportionate number of visitors there than in the large hall. Although each year there are changes in the design and planting of the individual gardens, the general idea of treating the exhibits as indications of how garden areas of moderate dimensions may be laid out remains the same.

Probably few of the many visitors who derive so much pleasure from these gardens realise the almost heart-breaking difficulties under which they are often, and particularly this year, made. The disabilities of very limited time, and restricted space for working, and the transport of materials as well as plants of all kinds are as everyday matters to the nurseryman who exhibits a garden complete in every detail. That he has a rigidly defined, concrete-floored area for his exhibition garden, with very little extra space for the assembly of the materials and ten days only in which to carry out a more or less elaborate scheme, does not perturb him. Even, as this year, when to these difficulties are added the trials and tribulations of such severe weather as rarely occurs more than twice in a long life-time, the nurseryman-exhibitor rises superior to all hindrances and, at the appointed hour, presents a garden so complete and well-furnished in every detail that it might well have existed for several decades. Truly, the great flower show attending public owes him much more than it can imagine.

Comparisons are notoriously odious, and if the most critical were inclined to recall that on some former occasions the gardens were, perhaps, a thought brighter generally, and the turf more lush and trim, a comparison between the Olympia Gardens and those at home must engender feelings of pride in the great success accomplished by the exhibitors.

This year the general idea has been the country garden, and the scenic effects provided by the canvas draperies around the walls are especially successful. Where possible, most of the exhibitors have taken full advantage of this admirable scenery, and made most fascinating peeps and vistas. This is especially noticeable in the Old Mill Garden of Messrs. James Carter and Co. (Fig. 93). By the art and skill of their planting and their lighting effects they have obtained the delightful impression of a garden overlooking a placid countryside bathed in warm sunshine. The suggestion of the old mill is very clever, and many visitors found a thrill in gazing at the mill, whose attendant water-wheel turned slowly and rythmically, passing the water along a lazy little stream to the pools below. Rustic bridges span the stream, and grassy paths wind about the slopes where are flowers galore. The garden making and planting are of that studied disorder which betokens the highest art. The naked Birches rising above masses of early Pyruses and Prunuses, bordered with dwarf Rhododendrons and Azaleas, and a galaxy of Daffodils, Tulips and Dielytras, make a garden of great fascination and contentment.

The brightest colour in the gardens is provided by the delightful bushes of Rhododendron Warrior, by the terraces of the garden of Messrs. R. W. Wallace and Co., where the large, rounded trusses of glowing reddish-pink blooms light up the greensward. A pleasantly-winding paved path leads up to a comfortable garden house which is flanked by shrubberies of Prunuses, Viburnum Carlesii, flowering Cherries, Lilacs and other spring shrubs, and gives place to a rock garden, and on to plantings of Daffodils, Tulips and Iris reticulata. In their allotted space, Messrs. Allwood Bros. show that a satisfying garden may be made of Carnations and the allied Dianthus Allwoodii without the aid of other plants. It is chiefly a formal garden, with a small rock garden for the Dianthus Allwoodii and, as may be expected, the Carnations are of the greenhouse, perpetual-flowering varieties.

A paved garden of homely character and of considerable brightness is provided by Messrs. J. Cheal and Sons. This is essentially a spring garden, and in it are many floriferous bushes of Diervilleas, shrubby Spiraeas, Pyruses, Prunuses, Lilacs and Brooms, with heavily-flowered Rhododendrons and deciduous Azaleas. Daffodils are freely used, and in the small, formal portion there are beds of Primulas.

The Central Gardens Supply Co. have made a series of gardens of different types all coordinated into a harmonious whole. Their garden house, treatment of the slopes, and rock garden are especially successful and within their area would be found something of interest throughout the year. The garden of Mr. Herbert Brooks is more of the open spaces, and he has relied on the natural treatment of a moderately large slope, where he has an informal rock garden with stream and pool. The Peter Pan garden of Mr. Burton Holt, which, by the way, has grown up higher than any other in the Annexe, attracts many in search of novelty. The Orpington Nurseries' exhibit is of moorland character, with informal boulders and water, lightly planted with Heaths and various alpines.

A very uncommon Japanese garden has been made by Mr. George G. Whitelegg. Placid, little canals, crossed by flat stones on piles of a Conifer, presumably Cryptomeria japonica, enclose an island wherein is an attractive temple with attendant stone lanterns of conventional eastern design. Outside the canals the ground has been generously planted with exceptionally good specimens of double Cherries, Wistarias, Pyruses and Peaches. A breadth of heavily-berried bushes of Skimmia japonica is also very effective. The hammered gate which opens to the paved path leading to a sundial in the garden of Mr. Ronald S. Skelton, is a particularly happy thought. Within the garden there are plenty of Forsythias, Magnolias, Berberises, Spiraeas, Pyruses and Azaleas. Messrs. Bakers have an attractive Heath-clad slope, with an appropriate garden house in the higher corner, while on lower ground there is a walled portion, and a good shrubbery border.

Considerable space has been allotted to the Country Service Association, whose hillside planting, with informal rock garden and gentle stream with pool, is especially effective. Elsewhere they have a semi-wild garden with stone dove-cote and, on the opposite side of the pathway, a formal garden thickly planted with Anemones. Nearby, Mr. Whitelegg has a second garden ; this is of more formal character, with terraces and pool, suitably planted. Mr. Baldwin Pinney has made a formal garden, and in it he shows well-flowered Violets, Primula Wanda, P. kewensis, P. malacoides and others. Mr. John Klinkert has his customary topiary garden, where he displays a great variety of perfectly pruned examples, mostly in evergreen Box.

The Sunny Hour Villa Garden is presented by Messrs. L. R. Russell, Ltd. Here they have, in a very effective centre, the best turf in the building, and the rustic, Heather-thatched summer-house is very inviting. The beds of dwarf Japanese Azaleas, and the neat rock garden find many admirers. A good shrubbery border which encloses the garden provides fitting places for Magnolias, Forsythias, Camellias, Lilacs, Azaleas and many more shrubs. Mr. R. Crewdson Day has a formal garden, and Messrs. Windward are showing good Violets from the west of England.

In addition to their Old Mill Garden, Messrs. James Carter and Co. are responsible for the bright and attractive beds in the Spring Garden of the Tea Enclosure, where they have excellent Hyacinths, Daffodils and Tulips ; and also for the Sunshine Garden in another part of Olympia, where many Azaleas and Daffodils add greatly to the attractions of the corner.

ON STOKING.

The recent spell of Arctic weather all over the country has given journeyman gardeners engaged in stoking duty the opportunity of proving their worth, and at the same time earning in no small degree the appreciation of their employers and the gardeners over them.

Stoking, at all seasons of the year, plays an important part in the success of a garden establishment, and it seems strange that a young gardener's abilities in this direction seldom figure in present-day references. In these days when all head gardeners have to study fuel economy, the young men who tend the heating apparatus and maintain the required maximum heat on a minimum supply of fuel can save their employers a considerable amount of money if they only exercise care and judgment, and carry out their duties conscientiously.

The chief fault with the majority of young men on duty is their over-eagerness to get the heat up, and consequently, should they be "called over the coals" when the temperatures are down on a certain morning, they go to the other extreme and have the temperatures too high the following morning, little realising that a very high temperature is as injurious to plant life as a very low one.

The practice of governing the heating of a range of houses heated by one boiler, by the thermometer in the hottest house, has its advantages, for the man on duty knows that if the temperature in that particular house is correct, the others will be correct if the respective valves are opened sufficiently. The opening and shutting of valves according to weather conditions should at all times be left to the supervision of one man—for preference, the inside foreman—for it not infrequently happens that, unless one person alone is made responsible, when the temperature drops quickly the man on duty turns a little extra heat on, the foreman goes round soon after—before the temperature has time to rise,—and turns a little more on, and later, the head gardener does the same, with the result that too much heat is turned on, to the detriment of the plants.

Another important point which young men should pay more attention to is to keep the fires well back during the day time, when the sun causes the temperatures to rise, for unnecessary heat in the pipes on bright days tends to bring about attacks of red spider. During the lengthening days, when a few hours of bright sunshine are followed by a sharp frost at night, the fires should be started early in the afternoon and the houses shut before the sun sets, thereby keeping the temperature up with the sun-heat—this applies especially to fruit houses —for if a steady circulation of heat is maintained through the pipes before the sun sets, it is easier to keep the houses at the required temperatures, rather than to let the temperatures fall and then have to force the fires to get them up again.

The ash-pit under the boilers should be cleaned out at least once a day and the flues once a week—for preference, on the day the man on duty gives place to his successor, and all air taps should be examined periodically to release any air that may be in the pipes, and preventing the circulation of the hot water. During severe weather the pipes in cold fruit houses should be kept warm to prevent them freezing ; should the water in them get frozen, the air taps should be opened prior to turning on gentle heat, to prevent the pipes bursting. The essentials which make a good stoker are consistency, the careful usage of fuel, and the ability to keep the temperature at a happy medium—not too hot or too cold. *A. J. Turner, Newton Park Gardens, Burton-on-Trent, Staffs.*

HOME CORRESPONDENCE.

Professional Gardeners.—Between three and four years ago, a gentleman in the north of England applied to the Secretary of the Professional Gardeners' Association for a gardener. He required a really good man. The Society found him one who satisfied all his requirements. Unfortunately, from the employer's point of view, his gardener has suddenly decided to go to one of our dominions, and his employer would like the P.G.A. to fill the vacancy. This the Society has great difficulty in doing, as, at present, there is not a member on the books who is wanting work. Consequently, the situation was advertised in *The Gardeners' Chronicle* under a box number. Applicants were asked to state wages required, with house, etc. The wages asked ranged from 45s. to 60s. The previous gardener's wage greatly exceeded the highest amount mentioned and, in spite of the numerous applications, the situation, at the time of writing, is still open. Had some of the applicants for the situation belonged to the P.G.A. no doubt one of them would soon have been filling the vacancy. Now, my fellow gardeners, it is time that all gardeners should join hands and increase the ranks of the P.G.A. Let us have a branch in every large centre of the United Kingdom. There is not the slightest doubt that it would be to the advantage of both the employer and employee. The employer, through the agency of the Association, obtains a man trained in the gardening profession, who knows his work and who is not afraid of the hard work and long hours entailed in order to make his garden both a pleasure and a profit. There is a feeling prevalent in sections of both employers and employed that a garden is only a luxury. Now this is a fallacy, for most gardens are, from two points of view, exceedingly profitable. The vegetables and fruits provide a large percentage of our national food, while flowers admittedly give great pleasure. I well remember Mr. Greenfield telling me that, when he was engaged on food production work for the Government during the war, the flowers he grew did more for the wounded, and for the overworked people at home, than all the food he produced. We know, too, that during the war it was the shortage of vegetables (especially greens) which was the cause of so much skin trouble and internal complaints generally. I think all will therefore agree with me that gardens are vitally necessary for the welfare of the community, so that we want the right men for the gardens, gardeners who have been trained from their youth. A good gardener has a true knowledge of his worth. A £2 per week man is generally only worth £2, but a man who can justly ask £4 per week can, and will, get it to-day in a great many cases. The Professional Gardeners' Association is a growing body and any gardeners desirous of information about it should apply to the General Secretary, Mr. G. Reid, Polland Hall Gardens, Gomersal, Yorks. Mr. Reid is a man of large stature, and with a large heart, whose ambition it is to see the gardener's wages and status improved. I see in *The Gardeners' Chronicle* for February 2, that Mr. Batty would like to see an association for gardeners ; the P.G.A. is what he is looking for, as it is run on non-political and non-compulsory lines, for the uplifting of horticulture and to create a more amicable feeling between employer and employee. *H. B.*

Ivy.—There is one garden use of Ivy to which our learned friend, the Rev. Hilderic Friend (p. 100), made no allusion. I refer to the old-fashioned baskets, perhaps these were Victorian and so, of course, quite discreditable in these days, which in a formal garden possibly yet deserve some merit. A deep, circular hedge of Ivy was formed around a flower bed, and an arch clothed with it was trained to form the handle. If memory serves me, some such were a feature in the garden of the late Sir Sydney Waterlow, now Waterlow Park—perhaps they still survive there. *H. E. D.*

Early-flowering Chrysanthemums.—The account of trials carried out by Mr. Sherwell-Cooper (p. 102, February 9), is of great value, and comes at a time when lists are being prepared for this season. Having possibly had less rain—25·75 inches during 1928—than Cheshire, several of the varieties mentioned did admirably, notably Periscope and Peerless ; these we are growing more of this year as they were extra good in colour and size of flower. *G. H. Emmett, Taplow.*

Partial Sterilisation of Soil.—I have been greatly interested in the many letters published recently in *The Gardeners' Chronicle* on this important subject, and would like to state my opinion. Mr. Falconer (December 22, 1928, p. 494) stated he has tried both the baking and the steaming methods, and has come to the conclusion that the latter gives the better results every time. My experience has been similar to Mr. Falconer's, and, although at one time I strongly favoured the baking process, the numerous experiments I carried out proved beyond doubt that steam sterilisation is by far the best for the average grower. The plant I use at the present time is the Sterilatum, made by Messrs. Jones and Attwood, of Stourbridge, and one which was recently mentioned by Mr. Falconer in his remarks on the different plants available. Although not large enough for the commercial grower, it is undoubtedly a first-class machine for the private grower, and a few remarks as to its construction and method of use may be helpful to those who may be on the look-out for an efficient plant at an economic price. The water container beneath the soil compartment has a capacity of fifteen gallons, and when this has been filled, the fire is started in the fire-box beneath. The compost is then placed in its container and covered with the lid. The fire is lit at 9 a.m. and, except for being stoked up an hour later, requires no more attention until the soil is ready for removal to a clean potting bench at noon, another quantity of soil being treated during the afternoon. The plant will sterilise from eight to ten good barrowloads of soil a day if filled twice, at the very low consumption of three bucketsful of coal. The advantages gained by the steaming method are: The soil is cleared of harmful agencies, so that the ammonia-producing bacteria may increase rapidly; the plant food in the soil is retained and often increased; and the soil is in perfect condition for use almost immediately after being taken from the container. On the other hand, baking the soil to a state of absolute dryness creates an excess of potash, which naturally renders the soil unfit for plant life; the humus in the soil is reduced to a fraction of its value, and at least a month must elapse before the soil may be used with any degree of safety. As an experiment, I would strongly urge any grower who is undecided as to the best method, to pot up half his batch of Cyclamen seedlings in soil which has been sterilised by the baking process, and the other half in steam-sterilised soil, and to note the difference in their appearance three months hence. *Henry G. Gibson, Surbiton.*

Cyclamens.— I enclose a photograph (Fig. 94) of Cyclamens which were greatly admired in Dublin last year. The seeds were sown in the previous August, in pans containing a compost of two parts loam, one part leaf-soil and sufficient sand to ensure drainage; the pans were then placed in a warm propagating house and when germination took place they were placed near the roof-glass and kept shaded only from strong sunlight. When fit to handle, the seedlings were pricked out two inches apart, in large pans, in a similar compost to that described, but with dried cow manure added. In these pans they were grown on until February, when they were potted into four-inch pots, in a similar compost; as these pots became full of roots, six-inch pots were provided and less sand was used in the compost. During July, August and September, the Cyclamens were kept in a cool house where plenty of air was admitted day and night, and shading afforded during strong sunlight. In October, the plants were moved to a house where the temperature was never allowed to fall below 50° or rise above 65° during the winter, and the result was a bountiful supply of blooms over a long period. The whole secret of success may be summed up in a few words—unvarying temperature, the proper use of the watering-can, plenty of air, avoidance of cold draughts, shade in summer (from strong sunshine only), and freedom from insect pests. *C. J. Leonard, The Gardens, Howth Castle, Co. Dublin.*

Number of Florets in an Exhibition Chrysanthemum.—The publication of the various counts of florets in exhibition Chrysanthemums has proved most interesting thanks to *A. C. B.*, for counts of older varieties, and also Mr. Street (p. 145) for a more recent introduction. Owing to the great disparity between the number of florets contained in the different varieties mentioned, I should like to suggest an analysis of the specimens dissected. *A. C. B.'s* Japanese bloom, *e.g.*, Madame Carnot (a variety I can just remember) had rather narrow florets, although it built up a huge flower; the variety Wm. Turner, of the Japanese Incurved type, has somewhat narrow florets very closely packed together, whereas the variety Louisa Pockett is a much coarser flower, having thick, leathery florets, many of the first to open being tubular, while the later ones are often fully half- to three-quarters-of-an-inch wide, thus requiring much sustenance from the plant to carry them through to perfection; this undoubtedly accounts for the smaller number of florets it contained. *A. W. Warner, Hamble Cliff.*

Root-stock Problem in Apple-growing.—My attention has been called to an article in your issue of February 23, on the above subject. The writer, Mr. H. Howard Grace, finishes his letter by stating that "Apple trees overseas are mostly standards, and that eventually they will be the same here." This is quite contrary to fact as regards our chief competitors, such as those in British Columbia and the western States of Washington, and Oregon. The former of these is now the leading Apple-growing State of the Union. As a few years ago I had the pleasure of visiting many of the Apple-producing districts of these north-west States, I can state that all the newly-planted orchards are of what we call bush trees, that is, they have no tall, bare bole. As they get older, some of the bottom branches may be cut off, if very low. In a country where it is necessary to spray from four to six times per annum, it is absolutely necessary that the trees should be kept fairly low. In the States that have severe winters the stocks are brought inside, grafted a few inches above the ground level, covered with sand until the frost breaks, and then planted in the nursery rows. In Australia, where I spent the best part of my life, the Northern Spy stock has been generally used for more than forty years, as this is immune to woolly aphis. This stock is also worked chiefly by budding a few inches above the ground level. These stocks are generally produced from stools, thus ensuring their being true to type. In these days, when quality counts, and this can only be obtained by spraying and thinning, low trees are more than ever desirable, and do not require a forty-runged ladder to enable workers to deal with them. *J. C. Alpars, Te Hongi, Longford, Gloucester.*

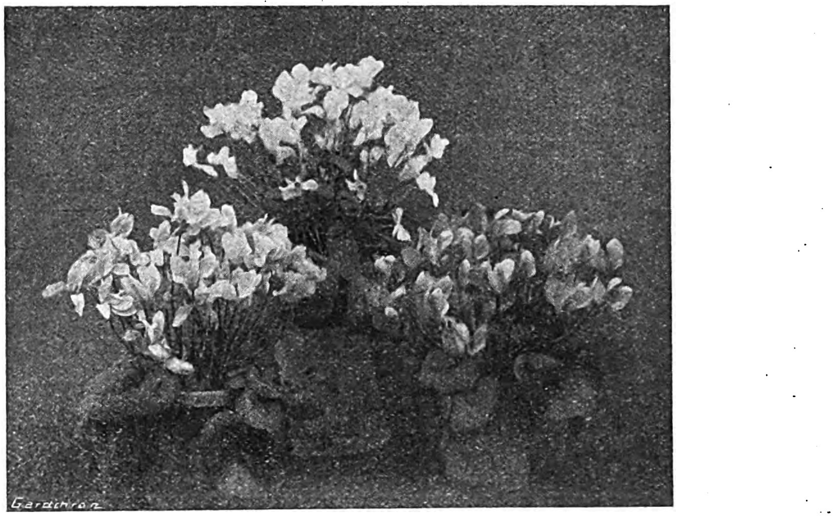


FIG. 94.—CYCLAMENS EXHIBITED AT DUBLIN.

Lapagerias.—*W. P. W.* (p. 145) writes of his experience in the grand old establishment of Messrs. James Veitch and Sons fifty-two years ago. It is quite refreshing to meet (even in print) one of the veterans of those good old days, and does one good to think of the fine men who were the departmental "chiefs" of those times. Your correspondent will, no doubt, remember Mr. Dominy, Mr. Manning, Mr. (as he then was) Harry and Mr. Arthur Veitch, among many others, most of whom will have joined the great majority. Many useful lessons did young men learn in that splendid establishment, which have stood them in good stead in the years that have followed. The fine display of the Lapagerias as well as Orchids, Azaleas, etc., will, as your correspondent observes, never be effaced from the memory. *W. A. Jenkins, Ropner Park, Stockton-on-Tees.*

What Shall we do with our Greenhouses ?—This is a problem that those with glasshouses have to face. Large areas of glass are not wanted; general expenses are high; taxation makes the upkeep difficult, and the garden consequently suffers. Here, a large area of glass has been nearly obsolete since 1916. Last year we were asked to take it in hand and see what could be done with cold houses. Backed up by an interested employer, the first step was to get them in working order—with repairs and paint. Four of them have been growing Peaches and Nectarines for some time and has been generally profitable, finely-flavoured fruits, with good colour, of Duke of York, Condor, and Peregrine Peaches, and Elruge, Pine Apple and Lord Napier Nectarines, being produced. One vinery only was retained, planted with vines of Black Hamburgh, Alicante and Appley Towers, all successful sorts. Two large vineries were cleared and the borders planted with fan-trained Apricots, the varieties being New Large Early, Early Moorpark and St. Ambroise, while single cordons of Plums, choice dessert sorts such as Jefferson, Oullin's Gage, Coe's Golden Drop, Transparent Gage and Denniston's Superb, were planted against the pillars. Apples, such as Cox's Orange Pippin, Ribston Pippin and Madresfield Court are grown against one of the back walls, and Pears, that love a warm, sunny wall, are grown against the other, the varieties planted being Doyenné du Comice, Louise Bonne of Jersey, Fondante d'Automne and Clapp's Favourite—all cordons. Choice dessert Gooseberries, as single cordons, to act as fill-ups, and to be removed when the permanent trees required the room, were also planted. Market growers have for many years filled their houses with annual flowers, Tomatos, Cucumbers and vegetables that were in general demand. Why should not private gardeners do the same ? Having memories of the old orchard house cultivation, as gleaned under such grand old growers as James MacGregor, George Woodgate and Thomas Coomber, V.M.H., surely they can readily adapt themselves to present day conditions when heat is so difficult to secure. Bed cultivation generally suggests itself in preference to pot work, as being more economical and profitable, especially having regard to the labour problem. Gardeners, as a class, must be broad-minded, hard as it is to keep abreast with changing conditions. It would be extremely interesting to hear the experiences and views of others, through the medium of *The Gardeners' Chronicle*, on this problem with which modern gardeners are faced. *G. H. Everett, Taplow Court Gardens, Bucks.*

Japanese Gardens.—Japanese gardens have been planned and planted in many English grounds, yet they must necessarily miss much of the true spirit of a garden of Japan. A Japanese gardener works much as an artist does, seizing what is unchanging and fixing it into a little imaginary world of diminutive trees, rocks, bridges and water. Colour comes with the Azaleas, Maples and Cherries. All seem to have lived just so from time immemorial. In his garden beautiful there must be nothing to suggest the transitoriness or mutability of life. Flowers which attain their loveliness and then linger on through slow stages of decay violate his sense of beauty, they are kept out. Hence the love for Cherry-blossom—yesterday but pinky buds, to-day a mass of snowy-pink loveliness, and to-morrow, touched by the breeze, off it goes a shower of pinky snow, casting as it vanishes the most delicate and refined of odours. There is no decay, nothing to allow one's mind to dwell sadly on what once was loveliness. *A. Telfer, Coxland, Ewhurst, Surrey.*

Effects of the Severe Frost.—"Yesterday Ross-on-Wye, Herefordshire, was again the coldest place in the British Isles." Thus the meteorological report has expressed it several times during February. Here we are seventeen miles from Ross-on-Wye, as the crow flies, and our lowest temperature was 36° of frost, 4° below zero. The damage to shrubs etc., cannot yet be definitely stated. Ribes speciosum, Senecio Greyii, Veronica Traversii and some others seem past hoping for, and such things as Pyrus japonica and Prunus (Amygdalus) Davidiana var. alba have their round, plump buds reduced to a soft, dry, spongy consistency. In ordinary years they are making a gay show by the end of February. This year we wonder whether the wood buds will have been also badly damaged. But the damage which strikes the eye in every direction is that sustained by Laurel, Portugal Laurel, Laurestinus, and even Holly. On the Laurels particularly, the leaves have been turned very brown; in some cases the green has entirely disappeared and we wonder what will be the ultimate result. I have never before seen such damage to these shrubs, and if any of your readers can state from experience whether it would be best to leave them alone to recover, or to cut them back, and, if so, when, I shall be very glad to have their advice. Enclosed are a few Laurel sprays which will give you a very fair idea of what these shrubs are like at present. *P. Murray Thomson, Bridge Sollers, Hereford.*

[The foliage was brown and withered.—Eds.]

Gardeners' Pay and Status.—As a young professional gardener, I would like to give my version on the subject of "Gardeners' Pay and Status." To begin with, gardeners are generally treated and classed as domestic servants, while some people put us on a par with agricultural labourers, and name us as "yokels." This alone is sufficient to cause our low status, and therefore low wages. Of course, we should be classified, treated and paid as skilled tradesmen or professional men. Secondly, there seems to be a tendency among employers to adopt a certain standard or accepted rate of pay (unfortunately low) which they offer in a "take it or leave it" style, knowing full well that they can easily obtain a man at their price sooner or later. This is where so-called gardeners, such as your correspondents have previously mentioned, can jump in, to the detriment of professional gardeners. My belief is that employers know that we are worth more money than we get, and they can afford to pay more, but will not do so because they fear we might develop a little spirit of independence; this they will not tolerate. Another point is that gardening is generally looked upon as unimportant and of no consequence. The majority of people think mistakenly that anybody can "mess about" in a garden; supply a man with a besom, spade, and a pair of shears, and he automatically becomes a gardener! I certainly agree with your correspondent, R. J. Pearson, that the big horticultural centres could, and should, do something to dispel the bogey of low pay and status, which seems to have existed in the gardening profession for years. Apparently the Professional Gardeners' Association, whose activities are reported in *The Gardeners' Chronicle*, is a step in the right direction, and these reports make very welcome reading. To do any good it must have men at the head who are alive to the needs of the gardening profession, men who have progressive ideas, and a go-ahead programme, with the necessary power to carry it through. A point of importance is that professional gardeners must shake off their apathy and enter into the spirit of the thing, and then join up in their thousands. Anyhow, anything worth having is worth working for! *B. C.*

——Your correspondents, *J. Batty* and *H. E. D.* (page 166) both bear out my experience, which might be worth mentioning. After about twenty years of sound, all-round training, I felt myself quite capable of taking a head place. I accepted what appeared to be a good start. The place was infested with Gout-weed, in clay, notably in about nine hundred square yards of herbaceous border. There was nothing for it but to make a clean sweep, so I raised hundreds of plants, wheeled the old stuff away, and replanted. I was rewarded by my employer saying she preferred the border in its former condition, and would I take away all the labels; inside a week, I was asked to label the plants in the herbaceous borders! I struggled on, somewhat crestfallen, replacing Sphagnum-moss pulled out of the Orchid pots, and being insulted by instructions on how to water plants. After two years of this I respectfully suggested that I might be credited with some knowledge of garden work, and for this crime I was relegated to the horticultural scrap heap, my nerves and confidence shaken. This was about eighteen months ago, and I find no fewer than four men have been thus treated. It seems scarcely credible that a person who "prefers" Gout-weed to a well-planned herbaceous border should be able to ruin capable, conscientious men, but such is too obviously the case. *G. D.*

THE NATIONAL IMPORTANCE OF FRUIT-GROWING.—II.

(Continued from p. 165).

In the previous article I dealt with the amount of fruit that is consumed in the country; in this one, I propose to deal with the amount that can be economically produced.

Mr. Seabrook, in his paper, when comparing conditions in British Columbia with those in England, states "land fit for fruit can be bought in England at from £15 per acre." This statement, as it stands, is rather misleading, as much cheap land is limited in the fruits that it will grow. While it is impossible to generalise about such a varying thing as land, farms which are bought at £15 an acre will generally need a considerable outlay before they are in a condition for planting fruits. On the other hand, there is good fruit land in British Columbia for which no buyer will make an offer, even at the price of ordinary land in this country.

It is almost as difficult to generalise on the subject of yields as on that of land; but certain definite averages are available which have been used authoritatively by the countries concerned.

American and Nova Scotian cost records, as given in the Report of the Imperial Economic Committee, 1926, are based on an average yield of four to five tons, while the Ministry of Agriculture gives the annual yield for Great Britain and Ireland for 1908 as 41 cwt. per acre, and for 1913 as 35 cwt. per acre. (These are the only British figures available and refer only to productive acreage).

This average yield of about two tons per acre must be compared with the arable farmer's average of thirty-two bushels of Wheat per acre, and taken as a standard. Although the farmer is not content with thirty-two bushels, and hopes to grow more, he would be pleased indeed if he were to double this figure, let alone treble it.

In Mr. Seabrook's paper, he gives the average yields of his two best varieties of Apple, namely, Bismarck and Worcester Pearmain, over seven consecutive years, as more than seven tons per acre. He refers to the comparative irregularity of the British crop with reference to other countries, but is fortunate himself in obtaining an average yield well above theirs.

It is only on a basis of average yields that any calculations can be made about the amount of fruit available for replacing that which is imported. But the facts given in the former article indicate that it would be no easy matter to capture the balance of the market for hardy fruits in this country. This indication is confirmed by the Report of Fruit Marketing in the Ministry of Agriculture's Economic Series, No. 15, where it is stated that the percentage of Black Currants produced in this country was 72·1 in 1924, and 72·9 in 1925. This indicates clearly that the fruit-grower in this country has a monopoly of seventy per cent. of the Black Currants consumed in England. Similar figures for Apples in the same years are 26·2 per cent. and 53·7 per cent., and for Pears in 1923 and 1924, 2·7 per cent. and 28·1 per cent. These figures, taken together, show very clearly what Mr. Seabrook refers to in his paper, that our home-grown supply must be regular to ensure a successful sale, and that continuity of supply is essential.

As is seen from the figures quoted above, where a regular supply is assured, as with soft fruits, then the home market is held. But where the supply is erratic, as with Apples and Pears, the percentage of the home market filled must vary from year to year.

These facts are demonstrated by the crop figures for Black Currants, Apples and Pears, in 1924 and 1925 and are, for Black Currants, 1924, 360,000 cwts.; 1925, 258,000 cwts.; Apples, 1924, 2,382,500 cwts.; 1925, 6,526,500 cwts.; and Pears, 1923, 23,000 cwts.; 1924, 495,000 cwts. These figures indicate a very clear measure of the risk attached to the growing of each crop. *A Norfolk Grower.*

(To be continued).

FRUIT GARDEN.

THE MANURING OF FRUIT TREES.

The results of the investigations carried out at Long Ashton, by Mr. T. Wallace, on the manuring of fruit trees in relation to quality, and which he has disseminated widely, has supplied a long felt want to gardeners, and particularly to commercial fruit-growers. A brief summary of these investigations will, I am sure, be of much interest.

Mr. Wallace, at the outset, states "there is no one best method of manuring to produce 'quality.' Each case is a particular one, and the specific objectives can be gained only by a thorough knowledge of the effects of the particular factors contributing to the final result and by modifying or utilising these in an appropriate manner."

High yield must be sacrificed for quality. In general, with mature trees, the highest yields will be obtained under a system of high cultivation, plus high manuring, either with dung or artificial manures; but the fruits produced under such a system, while excellent and profitable in early sorts—and especially in culinary varieties—are poor keepers, travel badly, and lack colour. The use of dung in considerable quantities will not generally result in the production of fruits of high market value. The fruits produced under such a system are generally of the large, poor-keeping, poor colour and easily bruised type.

The production of fruits of high quality may be most readily obtained by manurial means on trees such as the Apple, by the intelligent use of artificial manures and, in particular, by the use of quick-acting, nitrogenous and potash manures. Phosphatic manures, he states, have given no important "quality" results.

Mr. Wallace gives some very important "deficiency" results. Deficiency of nitrogen decreases yield, size and high flavour. The fruits possess less juice and are slightly sub-acid. However, it increases firmness of flesh, and promotes a red colour or a deep yellow ground colour, which no rich manurial ingredient gives to any notable extent. Deficiency of phosphorous decreases yield and size. The colour is only slightly affected, but the flesh is soft, while the fruits do not keep well and the flavour is very sour and unpleasant. Deficiency of potassium decreases yield and size. The fruits retain an immature appearance. The red colour is generally poorer than in ordinary fruits and the ground colour tends to remain green. The fruits are sub-acid, sweet to taste, lack juice, but store fairly normally.

Little is known, as yet, of the effects of excesses of the three above manurial ingredients on quality, with the exception of nitrogen. The most usual effects of high nitrogen are increased size of fruits, loss of colour, soft, juicy flesh, poor keeping and travelling qualities, but a high flavour.

The proportions of the three main nutrient elements to use in order to obtain high quality, vary with the condition of the tree. The balance of the nitrogen over potassium should not be too great, and it is unnecessary to apply large dressings of phosphatic manures.

Mr. Wallace is of the opinion that practically all the desired effects may be obtained by the use of inorganic materials. There are, however, certain types of soil on which he would undoubtedly supplement his "inorganics" with organic matter in some form or other. Soils containing high proportions of lime often yield highly-coloured fruits, but excellent quality fruits are frequently grown on slightly acid soils.

Late summer is regarded as the best time to apply these manures to young trees, and many prominent growers hold that late summer is also the best time for those of mature age. *H. H. C.*

BLACK CURRANT DANIELS' SEPTEMBER.

UNTIL the advent of this new variety, the season of the Black Currant was all too short. Fruits of the Red and White sorts will, if duly protected, hang until late October or November, but the ordinary Black Currant is past its best at the end of July. The demand for this fruit in the kitchen has led me for many years past to extend the season so much as possible, but, unfortunately, the larger and better-grown the berries, the more readily do they drop off.

Daniels' September does not even commence to ripen its fruits until the other varieties are over, and there is not the slightest difficulty in keeping sound fruits until the middle of September. This variety is of robust constitution, carrying good foliage; the fruit bunch is long, sometimes bearing so many as twelve berries of average size, and of exceptionally good flavour.

Its origin is similar to that of many other good fruits. A single bush was observed growing in a local garden. Its value was recognised and cuttings secured, but for several years the new variety was planted experimentally, both in field and garden. Not until its superiority was decidedly proved was it exhibited and offered for sale. In 1916, it gained the Award of Merit, followed by a First Class Certificate in 1921, from the Royal Horticultural Society. The exhibit was of sprays cut from bushes grown in the open field, and the berries in August were so firm and fresh as to attract much attention.

My own experience on our rather light soil is very favourable, and I understand that Messrs. Daniels Bros. are backing it heavily, having already forty acres of this variety planted out for fruit-bearing alone. *J. Comber, Nymans Gardens, Handcross, Sussex.*

VEGETABLE GARDEN.

CUCUMBERS IN FRAMES.

THE results obtained from the growing of Cucumbers in frames are, in the main, far from the maximum obtainable, for a good frame is capable of affording ideal conditions for the cultivation of Cucumbers, and it is the purpose of these notes to give a few hints which may help those who do not get satisfactory results.

To attempt cultivation so early in the year as the present, a heated pit or a good hot-bed is essential, but from mid-May onwards, heat and hot-bed may be dispensed with, and the sun may be relied upon to produce the necessary warmth. If a hot-bed is used, a very small quantity only of good loamy soil is sufficient to start the young Cucumber plants in, but if no bed is used, a mound, about a foot high, built up of layers of loam and strawy manure, should be made, and the planting done in this. It is generally recommended that a plant be placed in the centre of each light, pinching the tip of the main growth back to encourage the production of laterals, which are then disposed over the frame area. In this respect the plants are treated differently from those grown in the Cucumber houses, where the leader is encouraged to run up quickly to the full extent of the roof. This latter method allows the orderly pinching and placing of laterals and subsequent shoots, and is to be preferred. It may be carried out in frames by placing the plant at the back of the frame instead of in the centre. Two plants are needed for a four-feet light, and the leader is run straight down the full length of the frame, stopping it at the end, the laterals being stopped at the second leaf and subsequent growths at one leaf.

Cucumbers should be planted in a small quantity of soil, and frequent top-dressings given as the roots emerge from the surface. If Cucumbers are planted as I suggest, top-dressing will be found to be a much simpler matter than if it had to be done to a plant in the centre of a light, where stems radiate in every direction, and a mass of leaves cover the root-system. In the same way watering is facilitated. Frequent waterings and continuous top-dressing with loam, so much beloved by Cucumbers, often results in the mound becoming consolidated, a condition detrimental to growth, as well as rendering effective watering difficult. To obviate this, an occasional dressing of one inch of short straw, between the layers of loam, is quite effective. Care should be taken that, if the strawy layer is from the manure heap, and contains ammonia, it is completely covered with loam at once, or bad scorching will result from the fumes given off in the heat.

Shading and ventilation are vital matters; the best crops are obtained by affording sufficient shade to make ventilation unnecessary. The hotter the sun, the denser should be the shade. Clearly, the ideal condition is a shading that may be removed daily, so soon as a decline in the sun's power renders it advisable, but this is generally impracticable, and a more or less permanent shading is put on the glass. This may be made of whiting and sprayed on with a syringe. Such a shading will be washed off by the first rain, and is thus advantageous to the extent of being off when not required, *i.e.*, during a rainy spell. Care must be taken that it is renewed so soon as the bright weather returns, for an hour's sun will do great damage. A shading that will withstand rain may be made of flour. Personally, I give a light shading of flour, and during a hot spell have recourse to the temporary shade of whiting in addition. By following this practice, keeping the atmosphere moist, and the plants well watered, ventilation need not be considered.

Feeding is much appreciated by plants cropping heavily, and nothing seems to be more suitable than weak, clear liquid sheep manure. Soot-water is a tonic, and a sprinkling of slaked lime over the bed occasionally should benefit the plants greatly. When the first crop of fruits has been gathered, and the exhausted shoots have been cut out, it is a good plan to withhold water until the bed is nearly dried out. This will result in a flush of young shoots and renewed root action when watering is again practised.

It often happens that a few cold nights experienced when the plants are young, place the whole crop in jeopardy. Covering the glass is a great help, but a valuable additional safeguard is to fit a paper bag over each plant. This is worth doing as a matter of course with plants on a hot-bed, particularly if the bag is made to fit down closely over the entire mound of soil. It may be practised even in houses, and improved growth will be evident if they are covered nightly for a week. *E. Brown, Hillside, Doddington, Sittingbourne, Kent.*

SOCIETIES.

DERBYSHIRE HORTICULTURAL.

AT the monthly meeting of the Derbyshire Horticultural Association, held at the Agricultural Institute, Derby, Mr. A. R. S. Proctor, F.L.S., gave an interesting lecture on "British Alpines," illustrated by a series of lantern slides.

The lecturer described the conditions which led up to the present distribution of alpine plants in this country, and the part played by the climate, soil and exposure in maintaining or reducing their numbers. It is quite possible to grow many of these alpines in the rock garden, but certain kinds, such as Dryas octopetala, need careful attention to their ecological requirements, before success is obtained. There are a few sub-alpine species still retained in the Derbyshire flora, but for the most part we must turn to the high mountains of Cumberland and Wales, and the Scottish Bens, although the highest peak, Ben Nevis, is particularly poor in alpine species, due to the great stretches of inhospitable granite boulders.

The slides revealed a great difference on the rock ledges of Ben Lui, in the west, and Glen Clova, in the east, where, amid heavy precipitations, very low temperatures far into the summer, and on a rich, porous soil, the alpines grow in wonderful luxuriance. It is, however, in the corries and on the rocky ledges of the Breadalbane mountains that these plants reach their optimum in Britain. Here may be found, among many others, several rare Saxifrages, Veronicas, the mountain Erigeron, and, in places, great masses of the alpine Myosotis, whose intense blue is only surpassed by that of the Snow Gentian at the foot of the rocks.

Most of these plants, except the Gentian, which is an annual, can be grown in the rock garden with, perhaps, only a loss of colour intensity, but it is most undesirable that any should be taken from their natural surroundings, as they are fighting a losing battle as it is with the climatic conditions, every hot summer reducing their numbers, while every one dug up by the collector hastens the day of their extermination. This, however, does not prevent gardeners enjoying these treasures in their own gardens, for seeds of most of them may be procured from firms which cater for this type of plant, and although some are slow in germination, this is certainly the method recommended.

Mr. L. Smith, Derby, proposed a hearty vote of thanks, seconded by Mr. A. H. Harrison, Melbourne, supported by the Hon. Secretary, Mr. W. Wardman.

BATLEY PAXTON.

THE Annual Dinner of the Batley Paxton Society was held at Wilton Arms Hotel, on Thursday, February 14. Mr. J. Rhodes presided and among those present were Mr. J. Schofield (Chairman of Committee), Mr. A. Jennings (Treasurer), Mr. J. F. Stubby (Secretary), Mr. J. W. Bray (Corresponding Secretary), members of the Committee and Messrs. H. Fordham (Wakefield Society), C. F. Pragnall (Leeds), Horne (Bradford), and F. Sanderson (Huddersfield). Appreciated musical items were given by Messrs. H. Jennings, F. Jennings and J. H. Jennings.

Proposing "The Society," the President stated that good progress was being made; they had a record membership and fine attendances at the winter lectures, which commenced two or three weeks ago. Various subjects were dealt with and helpful discussions followed. He thought great good would result. He was very sorry their ex-President, Mr. Arthur Kemp, was ill and unable to be present. The November show was stated twenty years ago to be the best one-day show in Yorkshire, and he thought last year's show proved it still maintained that reputation. They had a record exhibition of Chrysanthemums, and donated £11 to the local hospital. A new schedule had been adopted for this year, and many supporters had come forward with generous offers to provide prizes;

one local gentleman offering a Rose bowl for competition and others special prizes.

"Kindred Societies and Visiting Friends" were toasted by Mr. Schofield, who said they were indebted to fellow Paxtonians for help, and proud of their association with the professional men connected with the Leeds, Bradford and Wakefield Societies. Mr. Fordham offered the Wakefield Society's best wishes for Batley's success. Wakefield celebrated its jubilee two years ago, and he was glad to note the Batley Society had passed its forty-first year. Wakefield's jubilee celebrations lasted three weeks. The first week they had a trip to the Yorkshire dales, the following week a dinner, and the third week they planted trees in Wakefield Park on a triangular plot of land allocated by the Corporation and now called "Paxton Corner."

BRITISH MYCOLOGICAL.

A meeting of the British Mycological Society was held at University College, London, on January 26, with Miss E. M. Wakefield, President, in the chair. The first paper was by Dr. Alex. Smith on "Some Observations of Puccinia Menthae."

Examination of infected plants of the common garden Mint from a variety of sources has failed to confirm the presence of a perennial mycelium for the aecidial stage of the rust, Puccinia Menthae. It is concluded that if a perennial mycelium does occur, it is too infrequent to be of any significance in the life history of the fungus. The mycelium is confined to the hypertrophied area and its immediate neighbourhood, and does not proceed to the underground portions of the plant.

Infection takes place in late autumn, during winter, and probably also in early spring, whenever the weather is sufficiently open and young Mint buds are showing above ground. Under experimental conditions good results were obtained from inoculations made with germinating teleutospores, from early November up to Christmas. Successful infections, both naturally and artificially produced, could, in some seasons, be detected as early as mid-January. Infection of fresh growth at the tops of old shoots in autumn has been shown to occur in October and November, proceeding presumably from early germination of teleutospores. Normal aecidia on hypertrophied shoots resulted. Investigation showed that the mycelium of these infected shoots was not connected with mycelium in the main stem.

Hand-picking of infected shoots gave no obvious control. Burning straw on the infected bed in September and early October gave very considerable reduction, and in some cases complete elimination, of the disease. The most satisfactory method of control has, however, been found to be in the establishment of fresh plantations free from the disease. This may be best secured by digging up underground stems in September and removing from them all above-ground portions. After washing under a tap or hose-pipe to remove adherent earth and spores, they should be planted as remotely as possible from infected plants. As an additional precaution the bed from which stock is to be taken may be blazed with straw, even although it is to be destroyed later.

The needs of the Mint-forcing industry have not yet been investigated, but this latter method should, with modifications, prove suitable, although the establishment of healthy stock beds, as outlined above, should be the ideal. The rust of the Peppermint has not yet been investigated.

Miss D. M. Cayley followed with a paper on "Some observations on the Genus Didymium (Mycetozoa)." Some observations on the conditions conducive to the production of sporangia by several species of Didymium, when grown in culture, were discussed, more especially with regard to D. difforme. The process of fusion of the gametes in the motile swarm spore stage in this species, as seen *in vivo* under the microscope, both in mono- and multi-spore cultures, was described. The observations, together with further experimental proof of the development of sporangia in three successive generations of mono-spore cultures grown on a synthetic medium, were brought forward as evidence of the bisexuality of the spores, as against the assertion of unisexuality made by Skupienshi in a recent publication. Our present knowledge of the meiotic division before spore delimitation in the mycetozoa was reviewed and criticised. Only two or three authentic cases of typical meiosis before spore formation are known, namely, Ceratiomyxa fructiulosa, Reticularia Lycoperdon and, possibly, Dictyostelium mucoroides, giving rise to spores which are definitely haploid. In all the other species of Endosporae which have been investigated cytologically, only one division is recorded, held by some investigators to be a reduction division. The inadvisability of assuming that the reduction process can be completed in a single division, and that the resulting spores are haploid, until further evidence is to hand, was emphasised.

The next paper was on "An Investigation of the Metabolism of Nematospora Gossypii, Ashby and Nowell," by Miss E. Helen M. Farries.

Among the "Fungi of Stigmatomycosis" there exists an interesting range of specialisation as regards their nitrogen metabolism. Nematospora Gossypii (Tanganyka strain) is the most highly specialised of the group; it will grow on a complex source of nitrogen, such as peptone, but it will not grow on asparagin and inorganic salts. Experiments have been carried out to determine upon what this specialisation depends.

The complex molecule of peptone is not essential, for the fungus will grow equally well upon the mixture of amino-acids derived from acid hydrolysis of peptone; and to a lesser degree upon the hydrolysis products of casein, white of egg, and gluten. Nitrogen substances essential for growth are, however, absent from the amino-acids of gelatin, and from synthetic mixtures of pure amino-acids. Growth on the two fractions of hydrolised peptone, *i.e.*, basic amino-acids and "acid" amino-acids, suggests that certain impurities in the commercial peptone may be valuable. This hypothesis is supported by the fact that the fungus would not grow on the hydrolysis products of a highly purified albumen. Such work may throw light upon the complex question of the physiology of obligate parasitism.

Mr. M. Mitra then gave an account of a species of Phytophthora causing damping-off of Cotton seedlings, and a "fruit rot" of Guava in India. Inoculation experiments confirmed the morphological identification that the fungus causing the appearance of irregular, water-soaked patches on the cotyledons and first-formed leaves of Cotton seedlings, and that producing a rotting of Guava fruits very similar to the "Cottony Leak" of Cucurbits, are both Phytophthora parasitica, Dast.

The last paper was by Professor A. Chaston Chapman, on a new species of Oidium; read in his absence by Mr. J. Ramsbottom. The fungus grew in a sewer connecting a factory with the main sewer of the town, and increased so rapidly that the sewer soon became almost blocked. The sewer was used for conveying the factory effluent to the lower sewer, and was jointed at a certain point by a side drain conveying a very small quantity of domestic sewage. Fungal growth always began just below the point at which domestic sewage entered and from here onwards developed into a hard, gelatinous mass which ultimately blocked the sewer. Experiments showed that the mould grew slowly in the factory effluent alone, but rapidly when a little nitrogen was added in the form of sterilised domestic sewage. This explained the fact that the mould did not develop in the factory sewer until the point was reached at which the domestic sewage entered, the necessary carbon being supplied by sodium acetate in the factory effluent.

GUILDFORD GARDENERS'.

On February 12, Mr. N. Cook, of Reading, visited this Association and delivered a lecture on "Pests of the Kitchen Garden."

By way of preface to the lecture, Mr. Cook conveyed friendly greetings from the Reading Society, and in doing so paid a few graceful compliments to the Guildford Association, and the work of its sub-committees, with special reference to the valuable assistance rendered by the lady members. Mr. Cook stated there is no sovereign remedy for the various garden pests; they cannot be wholly destroyed, and many forms of insect life are proof against winter and summer weather, however severe. All that can be done is to use preventives. In the first place there should be no indiscriminate destruction of birds. In the spring, even the queen wasp is a friend, therefore early autumn, not spring, is the time for wasp extermination. He did, however, advocate the giving of prizes for netting the Cabbage White butterfly, which is a pest altogether and serves no useful purpose at all. A great many palliatives were suggested by means of which pests could be kept down, but stress was laid on the necessity of growing healthy plants. It is the weaklings among plants, as among animals, that are attacked first; a strong, healthy plant is likely to resist attack where a weakling will succumb.

To attain this end, a little stimulation was recommended for plants in the very early stage of growth. When the food stored in the seed is used up, and before roots are properly formed, the seedling needs helping over a dangerous stage. Too much stimulant would promote soft growth, and so defeat the object in view. In dealing with this aspect of pest control, Mr. Cook gave many hints on the care and culture of commonly grown vegetables.

CARDIFF GARDENERS'.

The fortnightly meeting of the above Association was held at The Queen's Hotel, Cardiff, on February 26, Mr. W. Bennett presiding. Owing to the inclement weather, the attendance was not so large as usual. The lecturer for the evening was Mr. Childs, the Newport representative, and his subject was "Planting a half-acre Orchard with Standard Apples." The lecturer dealt with his subject in a most practical manner, laying stress on the importance of draining the land if this was at all low-lying or inclined to be wet. His method of planting and dealing with the trees afterwards was quite sound, and a diagram he produced indicated his proposed Apples in their respective positions, which showed he was an advocate of mixing his dessert and culinary kinds in a typical manner. The varieties of Apples he recommended called for some discussion.

There was a splendid display of Narcissi for prizes given by Mr. W. Webber, the first being awarded to Mr. C. Franklin; second, Mr. W. Bennettt; and third, Mr. J. Jones. For the best nine blooms of Perpetual-flowering Carnations, Mr. F. Baker secured the first prize, and Mr. Hardwick second. For the best three dishes of Rhubarb, Mr. Franklin was first, and Mr. H. Jenkins second.

Among competitors for points, Mr. J. Jones secured the maximum number, and an Award of Merit for a grand specimen of Coelogyne cristata. The maximum number of points was also awarded to Mr. Baker for an excellent dish of Lily White Seakale, and to Mr. Jenkins for a well-grown bowl of Tulips.

The next meeting will be held on March 12, when Mr. H. R. Farmer, of Cardiff Castle Gardens, will lecture on "Jam-making and Fruit Bottling." Ladies are cordially invited to this meeting.

TRADE NOTES.

In untrained hands, the indiscriminate use of fertilising chemicals for lawns and greens can be a perilous and even a costly undertaking; the green-keeper will therefore be well advised to seek such guidance as is given in the booklet issued by Messrs. Joseph Fison and Co., Ltd., of Ipswich. This is a manual upon the preservation and maintenance of every kind of grass.

Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle.*

ANSWERS TO CORRESPONDENTS.

BASIC SLAG FOR SPORTS GROUND.—*A. J. G.* Basic slag may be applied to a sports ground at the rate of three ounces per square yard in winter or early spring, but its effect is to encourage the growth of Clovers at the expense of grass. It only supplies phosphoric acid to the plant, however, and if your sports ground is nearly exhausted, we suggest that a quicker acting and complete manure would be more suitable for application this spring. If your soil is of a heavy nature, apply a mixture of one part sulphate of ammonia and two parts superphosphate at the rate of two ounces per square yard. If the soil is light and sandy, add one part of sulphate of potash to the mixture, thus making it a complete fertiliser, and apply at the rate of two ounces per square yard. In either case, if the mixture is mixed with three or four times its volume of sifted leaf-soil, it will facilitate uniform distribution and be of benefit to the grass.

BROMPTON STOCKS DISEASED.—*H. W.* The Brompton Stocks are affected by one of the foot-rot fungi. There is a chance of saving many of the plants by watering the soil with Cheshunt compound.

CARNATIONS UNHEALTHY.—*J. R.* The root systems of the Carnation plants are very unhealthy but no pathogenic organisms were discovered on the plants. The trouble may be due to high temperature, over-watering or excessive feeding.

CINERARIAS FAILING.—*D. F.* The Cineraria plant showed no evidence of attack by fungi or insects. The failure may be due to fumes from coal gas or from oil stoves. Trouble similar to this is often experienced where there is a great fluctuation between day and night temperatures.

CHRYSANTHEMUM RUST.—*E. H.* The Chrysanthemum foliage is suffering from an attack of rust, due to the fungus named Puccinia Chrysanthemi. The disease is carried by wind-blown spores and by means of cuttings and old stock plants. The plants should be dusted with flowers of sulphur as a preventive and careful attention should be paid to the selection of stock, ventilation and watering.

FUCHSIA ARBORESCENS.—*G.* Your plant is Fuchsia arborescens, a native of Mexico. It requires greenhouse treatment, but might withstand the winter in favoured localities in the west and south-west districts.

HYACINTHS FAILING.—*F. J.* It is apparent that the soil is not particularly suitable for Hyacinths, as, although they started to root fairly well, the roots died at a later date. But the failure is not wholly due to unsuitable soil. It is obvious that in many cases the bulbs were not of first-grade quality, and could not be expected to produce first-rate spikes.

NAMES OF PLANTS.—*G. B.* 1, Eupatorium riparium; 2, E. Weinmannianum; 3, Osmanthus aquifolium var.—*J. A. E.* 1, Cistus albidus; 2, might be a Helianthemum; 3, Coleonema album; 4, resembles Jacobinia pauciflora (better known as Libonia floribunda), but possibly only imitative; 5, resembles Lonicera pileata very closely; 6, Senecio laxifolius, so far as leaves are concerned. Seedlings are not very reliable for naming, because they are liable to change somewhat as they get older.

PROPAGATION OF STATICE PROFUSA.—*W. A. T.* This plant is best propagated by means of cuttings, which should be inserted during the spring, sometime during March being suitable. Some of the smaller shoots should be selected for cuttings, those about four inches in length being of suitable size. They are best inserted singly in small pots, using a light, sandy compost; after watering in, the cutting pots should be plunged in a close propagating case, in a cool greenhouse; if slight bottom-heat is available it will hasten rooting. As cuttings of this plant take rather a long time to root, care must be exercised in watering and in the general management of the propagating case. Good results may also be obtained by inserting the cuttings in a sand bed and covering them with a handlight or bell-glass.

Communications Received.—R. F.—A. G.—R. E. A.—G. F. W.—A. P.

Obituary.

W. Camm—We regret to announce the death of Mr. W. Camm, for so many years gardener to Lord Astor, at Cliveden—the magnificent garden and estate above one of the loveliest reaches of the Thames. Mr. Camm was a most capable gardener, modest to a fault; indeed, had he cared to do so, he could have been a prominent personality in the horticultural world, but his love for the garden he managed so ably was so great that he rarely left it. Those who knew him best had a great affection for him, as he was generous, humorous, kindly to his staff, and a gardener of exceptional skill. Fruit-growing was his speciality, but this was not allowed to overshadow his cleverness in flower gardening, or his management of the trees and shrubs in the famous garden over which he presided for a very long period. Mr. Camm had been ailing for some time past and he passed away in Windsor Hospital on Wednesday, February 26.

John Courtney.—Many of his old friends will be sorry to hear of the death of Mr. J. C. Courtney (age sixty-five years) which occurred on February 28, at Zoar Villa, Piddletown, Dorchester. He retired from the position of Gardener at Ilsington House, Piddletown, five years ago, through ill health. He was well-known about twenty-five years ago as Orchid Grower to the late Colonel Brymer of Ilsington, uncle of the present owner, when he exhibited Orchids at the R.H.S. and west of England shows. Cattleya Brymeriana, Dendrobium Brymerianum, Laelio-Cattleya Ilsingtonensis and Thunia Brymeriana, are a few of the Orchids raised by him. The collection was sold after the death of Colonel Brymer. The funeral took place at Piddletown Church on March 4 (the "Weatherbury" of Thomas Hardy's novel *Far From the Madding Crowd*) where he officiated as sidesman for a goodly number of years.

B. A. Plemper van Balen.—It is with very great regret that we have to record the death at Utrecht on February 17, of Mr. Plemper van Balen, a well-known horticulturist of Wageningen, Holland, and a very constant and faithful reader of our journal. He was one of the old school of Dutch nurserymen; born at Wageningen in 1857, he early showed a taste for horticulture, and became an apprentice in the then famous nursery of Glym de Vos, at Utrecht, afterwards gaining further experience at Ghent and in Germany, and eventually becoming gardener to King William III of Luxembourg. Later on he was appointed Curator of the Amsterdam Botanic Gardens, but in 1896, when the new horticultural school was established at Wageningen, Mr. Plemper van Balen became a lecturer in the flower department, later on, when the Agricultural College was raised to the status of a "Hoogeschool," receiving an appointment on the staff. He took for many years a constant and active interest in horticultural affairs generally, but towards the end of his life enfeebled health compelled him to abandon active work, and in November, 1925, he wrote us in the excellent English he had at his command:—"Because of age and feeble health my turn has come to end my many years' subscription to *The Gardeners' Chronicle. Great thanks* for the always interesting and excellent weekly 'Chronicle of the Gardening World' I did receive so many years. Although he spent the last years of his life in enforced retirement, he leaves many warm friends, both in Holland and abroad, by whom he will be greatly missed.

NEW HORTICULTURAL INVENTIONS.

THESE particulars of New Patents, of interest to readers, have been selected from the Official *Journal of Patents*, and are published by permission of the Controller of H.M. Stationery Office.

LATEST PATENT APPLICATIONS.

2,358.—Corrie, B. J. B.—Fencing. January 23.
2,301.—Davidson, F. N., and Jacobs, J. D.—Gardening implements. January 23.
1,977.—Du Pont de Nemours and Co., E.I.—Seed disinfectants. January 21.
2,006.—Leake, H. M.—Seed drills. January 21.
3,329.—Dale, G. H.—Planting pots for nursery work, etc. January 31.

SPECIFICATIONS PUBLISHED.

304,422.—Walker, C. S. G., and Cook, W. G.—Fences.
304,505.—John, A. E., and John, J. T.—Grips for wheels of farm implements.
304,520.—Krebs, E. A., and Krebs, F. A.—Sub-soil ploughs.
304,568.—Hunt and Sons, Brades, Ltd., W., and Heaton, W.—Forks and similar hand implements used in land cultivation.
304,897.—Finlayson, A. K.—Flower-holder for bowls, vases and the like.

Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at the uniform price of 1s. each.

Abstract Published.

The litter of trimmings occasioned by cutting the edges of lawns can be avoided by the use of a new device patented under No. 302,981, by Messrs. W. N. Marcy and W. H. Clarke, of D'Abernon Lodge, Leatherhead, Surrey. One of the blades of the hand-shears for trimming grass edges, etc., is provided with a pan of approximately semi-circular planform, detachably secured to the blade by the bolts and nuts, the floor of the pan being below the bottom edge of the lower blade. The floor slopes upwards towards the blade, and also towards the front and rear corners, to enable the pan to ride past obstructions. For similar reasons the wall of the pan is reversely curved at the front to provide a leading pointed portion. The bolts are of slightly less diameter than the holes in the blade through which they pass, to allow limited adjustment.

THE LATEST TRADE MARKS.

THIS list of Trade Marks, of interest to readers, has been selected from the official *Trade Marks Journal*, and is published by permission of the Controller of H.M. Stationery Office.

TUBERITE.

498,389.—Chemical substances used for agricultural and horticultural purposes.—Tomlinson and Havward, Limited, 51, Newland, Lincoln. February 20.

SEMORI.

496,937.—Chemical substances used for agricultural and horticultural purposes.—August Karreth, trading as Luitpold-Werke, Chemische-pharmazeutische Fabrik, Luitpold-werk, Zielstattstrasse 9, Munchen 25, Bavaria, Germany. February 20.

An illustration of a tiger, with letters T. M. T., all within a diamond.

496,187.—Shovels, water-cans, etc.—Travail Mecanique de la Tole, Société Anonyme, 100, Avenue des Anciens Etangs, Forest, Brussels, Belgium. February 13.

DREM.

494,537.—Trowels, shovels and other like goods used in gardening.—Drem Products Corporation, 152, West 42nd Street, City, County and State of New York, United States of America. February 6.

MARKETS.

COVENT GARDEN, Tuesday, March 5, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Adiantum cuneatum, per doz.	10 0	12 0
—elegans	10 0	12 0
Aralia Sieboldii	8 0	9 0
Araucarias, per doz.	30 0	40 0
Asparagus plumosus	12 0	18 0
—Sprengeri	12 0	18 0
Aspidistras, green	16 0	60 0
Aspleniums, doz.	12 0	18 0
—32's	24 0	30 0
—nidus	12 0	15 0
Azaleas, 32's, each	5 0	7 0
—per doz.	48 0	60 0
—60's, per doz.	15 0	18 0
Cacti, per tray, 12's, 15's	5 0	7 0
Cinerarias, per doz.	21 0	24 0
Crotons, per doz.	30 0	45 0
Cyclamens, per doz.	24 0	36 0
Cyrtomiums	10 0	12 0
Daffodils, per doz.	12 0	15 0
Erica gracilis, per doz.	24 0	30 0
—nivalis, per doz.	24 0	36 0
Hyacinths (3 bulbs), per doz.	18 0	24 0
—60's (1 bulb), per doz.	8 0	9 0
Marguerites, white, per doz.	18 0	21 0
Nephrolepis in variety	12 0	18 0
—32's	24 0	36 0
Palms, Kentia	30 0	48 0
—60's	15 0	18 0
Pteris in variety	10 0	15 0
—large, 60's	5 0	6 0
—small	4 0	5 0
—72's, per tray of 15	2 6	3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	21 0	30 0
—cuneatum, per doz. bun.	15 0	16 0
Anemone fulgens, per doz.	8 0	9 0
Anemone, St. Brigid, per doz.	6 0	9 0
Arums (Richardias), per doz. blooms	9 0	12 0
Asparagus plumosus, per bun., long trails	2 6	3 0
—med. sprays	2 0	2 6
—short „	1 0	1 6
—Sprengeri, bun. long sprays	2 0	2 6
—med. „	1 6	2 6
—short „	1 0	1 3
Azaleas, white, per doz. bun.	10 0	12 0
Camellias, white, per doz. blooms	4 0	4 6
Carnations, per doz. blooms	3 6	5 0
Croton leaves, per doz.	1 9	2 6
Daffodils, single, per doz. bun.	9 0	12 0
—King Alfred, per doz. bun.	18 0	21 0
—double, per doz. bun.	9 0	12 0
—Victoria, per doz. bun.	12 0	15 0
—Princeps, per doz. bun.	8 0	10 0
—Sir Watkin, per doz. bun.	10 0	12 0
Ferns, French, per doz. bun.	10 0	12 0
Forget-me-nots, per doz. bun.	12 0	15 0
Freesias, white, per doz. bun.	5 0	6 0
Heather, white, per doz. bun.	9 0	12 0
Iris tingitana, per doz. blms.	6 0	7 0
Lilac, white, per doz. sprays	6 0	10 0
—mauve, per doz. sprays	6 0	9 0
Lilium longiflorum, long, per bun.	11 0	12 0
— — short, per doz. blooms	11 0	12 0
—speciosum rubrum, long, per doz.	5 6	6 0
— — — short, per doz.	4 6	5 0
Lily-of-the-Valley, per doz. bun.	24 0	30 0
Myrtle, green, per doz. bun.	1 6	2 6
Narcissus, Soliel d'Or, per doz. bun.	6 0	8 0
—Elvira, per doz. bun.	15 0	18 0
—Grand Primo	10 0	12 0
—ornatus, per doz. bun.	9 0	12 0
Orchids, per doz.		
—Cattleyas	18 0	30 0
—Cypripediums	9 0	18 0
Primroses, per doz. bun.	4 6	6 0
Prunus triloba, per bunch	4 0	5 0
Roses, per doz. blooms—		
—Columbia	12 0	18 0
—Richmond	6 0	9 0
—Yellow	8 0	12 0
Smilax, per doz. trails	4 6	5 0
Snowdrops, single, per doz. bun.	3 0	6 0
Stock, double white, per pad	10 0	12 0
—double pink, per pad	12 0	15 0
Tulips, per doz. bun—		
—white	30 0	36 0
—yellow	24 0	30 0
—red	27 0	30 0
—pink	30 0	36 0
—terra-cotta	18 0	24 0
—mauve	24 0	30 0
—double varieties	30 0	36 0
—Darwin's, pink, per doz. bun.	24 0	36 0
— — red, per doz. bun.	24 0	30 0
Violets, Prince of Wales, per doz. bun.	4 0	6 0
French Flowers—		
—Acacia (Mimosa), per doz. bun.	15 0	18 0
—Anemones, De Caen, per doz. bun.	—	15 0
—Ranunculus—double scarlet, per doz. bun.	12 0	15 0
— — carmine, per doz. bun.	12 0	15 0
—Violets, Parma, per large bun.	4 0	5 0

REMARKS.—Supplies have been steadily on the increase during the past week, and prices this morning showed a tendency to be lower than for some weeks past. Roses are now becoming more attractive, the varieties available being America, Columbia, Madame Butterfly, Golden Ophelia and Richmond. All Tulips sold freely at increased prices on Friday and Saturday last. La Reine and White Hawk continue to be the shortest in supply in this class, therefore prices for them remain very firm. More double varieties, in fine condition, are on sale, the principal sorts being Murillo, Couronne d'Or, Peach Blossom, Lucretia and Red Rose. Darwin Tulips are also much finer in quality, William Copland, Bartigon, Elizabeth, William Pitt and Rosy Red being the sorts available. Daffodils are on the increase from all sources; the principal sorts from home-growers are now Emperor, Golden Spur, Victoria, Princeps, Sir Watkin, King Alfred and Lucifer. Larger consignments of Daffodils are expected this week from the Channel Islands. Narcissus Grand Primo, White Pearl and Cornish White meet with a good demand owing to the scarcity of other white blooms. St. Brigid Anemones and A. fulgens, Snowdrops, single Violets and Freesias have increased in quantity. Primroses are the latest arrival in this department. All foliage remains very limited in quantity and prices are still very high; the consignments are soon cleared. In the French department conditions are slightly inproved. Paper White Narcissi are finished, but more white Stocks were on sale this morning.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Asparagus, English	10 0	10 6
—French—		
—Paris Green	10 0	11 0
—Lauris	10 0	12 0
—Giant	30 0	40 0
—Sprue	—	1 6
Beans—		
—Worthing, finest, per lb.	2 0	3 0
—Guernsey	2 6	4 0
—Madeira	4 6	7 0
Beet. per bag	4 0	6 0
Brussels Sprouts, ½-bag	2 6	4 0
Cabbage, per doz.	1 0	2 0
Carrots, ½-bag	5 0	6 0
Cauliflowers, Cornish, crates, 18's, 24's	10 0	12 0
—French, St. Malo	7 0	9 0
Chicory, Belgian	0 8	0 10
Cucumbers, doz.	4 0	15 0
Endive, French, per crate, 18's and 24's	6 0	7 6
Lettuce, Cabbage—		
—French, indoor, 48's, 60's	6 0	8 0
—outdoor, 24's	6 0	8 0
Mint, per doz. bun.	4 0	8 0
Mushrooms—		
—cups, per lb.	2 0	3 0
Onions, Spanish	18 0	20 0
Parsnips, cwt.	6 0	7 0
Peas, hothouse, per lb.	3 0	4 0
Potatos—		
—English, cwt.	7 0	8 0
—Azores, new per case	10 0	18 0
—new hot-house, per lb.	0 7	0 9
—Canary Island	10 0	14 0
—Algerian, new, per lb.	0 2½	0 3
Rhubarb, forced, per doz.	2 0	2 9
Savoys, per doz.	2 0	2 6
Seakale, boxes, 8 lb.	6 0	8 0
Tomatos, Canary Island, per bundle	10 0	15 0

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Extra Special	—	18 0
—Special	15 0	16 0
—Best	10 0	12 0
—American—		
—Newtown	13 0	14 0
—Albemarle Pippin, per barrel	30 0	34 0
—Nova Scotian—		
—Ben Davis	20 0	24 0
—Starks	22 0	24 0
—Golden Russet	32 0	36 0
—Ribston	35 0	40 0
Bananas, per bun.	14 0	25 0
Dates, dry, in cartons	4 0	6 6
Grapes—		
—English—		
—Gros Colmar	3 9	5 0
—Belgian Colmar	2 6	3 0
—Cape—		
—Colmar	12 0	20 0
—Hermitage	5 0	7 0
—Waltham Cross	12 0	16 0
—Rosaki	12 0	15 0
—Red and white Hanneport	12 0	15 0
—Molinera	10 0	12 0
Grape Fruits—		
—Jamaica	18 0	27 0
—Florida	25 0	27 0
—Honduras	—	24 0
Lemons, per case—		
—Messina	11 0	27 6
Nectarines, Cape, per tray	4 0	8 0
Oranges—		
—Seville, per case	18 0	26 0
—Almeria, case	18 0	30 0
—Jaffa	16 0	20 0
—Denia	18 0	42 6
Peaches, South African, tray	5 0	15 0
Pears, Cape—		
—Bon Chretien	4 0	5 0
—Beurre Hardy	5 0	8 0
—Beurre Bosc	6 0	7 0
—Californian—		
—Winter Nelis, ½-case	12 0	13 0
Pineapples, case	20 0	35 0
Plums, Cape—		
—October Purple	5 0	8 0
—Kelsey	6 0	10 0
—Apple Plum	6 0	12 0

REMARKS.—We are glad to report rather better conditions than have been ruling lately. Probably spells of sunshine have had a stimulating effect on the trade. Comparatively large supplies of Peaches, Grapes, Nectarines, Plums and Pears are arriving from the Cape, and there is a slightly better tendency towards fruit selling, although Pears are not selling too freely, having to meet the competition of Pears from America. Arrivals of Apples from the North American continent are not so heavy and values are inclined to be firmer. Some fine English Bramley's Seedling Apples are now being marketed, and selling well. A few Bismarck and Newton Wonder Apples are also available and realising fair prices. The inquiry for Oranges remains firm, probably due to the large amount of illness prevalent.

Forced Beans are easier in price, but do not sell particularly freely. The shipment of Madeira Beans this week was in good condition and sold well. Hothouse Potatos are a moderate trade, and those from the Azores are selling well. Asparagus from France, although quoted easier, is still comparatively costly, the cold weather having restricted supplies. There is little or no improvement to report in the demand for Canary Island Tomatoes a few really good grades sell moderately well, but there are far too many indifferent grades, which sell badly. Mushrooms remain a steady trade, with practically no fluctuation in price level. Some fairly large quantities of Broccoli from northern France and also from Cornwall are meeting a good reception from buyers. French salads continue in good demand, but are not very plentiful. Green vegetables are, of course, scarce, but even so, not particularly dear. The Potato trade is better and first-grade varieties are quoted at advanced prices.

GLASGOW.

The return of the frost, with all its former severity, was reflected in the condition of the cut flowers from the Continent and the south of England. Tulips probably suffered most, and prices were generally easier, Bartigon William Copland, Le Notre. Couronne d'Or, William Pitt and Princess Elizabeth realising from 10d. to 1s. 4d. for 6's; Peach Blossom, Lucretia, Flamingo, La Reine, Tea Rose, Murillo and Prince of Austria, 8d. to 1s. 2d. and Cardinal, 9d. to 1s. Daffodils were also cheaper King Alfred being worth 1s. 3d. to 1s. 6d. per dozen, and Emperor, Sir Watkin and Victoria, 1s. to 1s. 3d.; Golden Spur, 9d. to 1s. 3d.; Princeps, 6d. to 9d.; Ornatus, 5d. to 8d. White Hyacinths sold at 6d. for 3's; Carnations 2s. to 6s. per dozen; Red Roses, 12s.; Lilium longiflorum, 10s. to 12s.; Richardias, 10s. to 15s.; Muscari, 6d. to 9d. for 6's; Lily-of-the-Valley, 2s. 3d. to 2s. 6d. per bunch; Anemones, 1s. 6d. to 1s. 9d.; Freesias, 1s. 6d.; Wallflowers, 4d.; Ranunculi, 2s. to 2s. 6d.; Myosotis, 1s. 3d. to 1s. 9d.; and Mimosa, 16s. per cane. Locally-grown special blooms of Emperor and Victoria Daffodils realised 9d. to 10d. for 6's.

Trade in the fruit market was quiet. Valencia Oranges fluctuated between 17s. and 25s., according to counts, while seedless brands made 37s. Apple prices were firm, Delicious, ex fancy, selling at 18s. per case; Winesap, 15s. Newtowns, 14s. 6d.; and Greenings, No. 1, 34s. per barrel. Blue Goose Grape Fruits were quoted at 26s. per case; bitter Oranges, 21s.; Lemons, 15s. for 300 and 360 counts; Pineapples, 3s. 6d. to 4s. 6d. each; home-grown Grapes, 4s. to 4s. 6d. per lb.; Cape Grapes, 12s. to 15s. (10 lbs.); Waltham Cross and White Hanneport Grapes, 10s. to 12s. 6d.; black and red Grapes, 10s. to 15s. Plums, 6s. per box; Nectarines, 4s. to 5s.; Peaches 4s. for 32's; and 5s. 6d. for 21's.

Vegetable prices were irregular. Cucumbers declined to 24s. per dozen; but Lettuces and Cauliflowers were firm at 4s. and 6s. 6d. respectively. Guernsey French Beans ranged in price to 8s. per lb.; Endive, 17s. 6d. per crate and Rhubarb, up to 48s. per cwt. Mushrooms were steady at 2s. 3d. per lb.

SCHEDULES RECEIVED.

SOCIETE NATIONALE "LES AMIS DES POIS DE SENTEUR."—Sixth National Exhibition of Sweet Peas (with International Section), in the Botanic Gardens, Brussels, on Saturday, Sunday and Monday, June 29, 30 and July 1, 1929.—Secretary, G. Bodewijn, 61, rue de la Démocratie, Sanderlecht-Brussels.

INSTOW SPRING FLOWER SHOW.—Exhibition in the Rifle Hall, Instow, on Wednesday, April 3, 1929.—Secretary, Miss Hinchliff, Worlington House, Instow.

TEWKESBURY AND DISTRICT DAFFODIL AND SPRING FLOWER SOCIETY.—Exhibition, in the Town Hall, Tewkesbury, on Thursday, April 11, 1929.—Secretary, Mr. J. S Gannaway, Newtown, Tewkesbury.

GARDENING APPOINTMENT.

James Birkett, for the past twelve years Gardene to Alderman T. E. HIGHAM, J.P., Bank House Accrington, as Gardener to Alderman R. H. POSNETT, J.P., The Mount, Runcorn, Cheshire. [Thanks for 2s. for R.G.O.F. Box.—EDS.]

CATALOGUES RECEIVED.

SUTTON AND SONS, Reading.—Farmers' Year Book Root Seeds, Grass and Clover Seeds, Agricultural Fertilisers.

R. F. CALVERT, Coverack, Cornwall.—New and Choice Daffodils.

MAXWELL AND BEALE, Broadstone, Dorset.—Heathers and Dwarf Rock Garden Shrubs.

BARR AND SONS, Covent Garden, W.C.2.—Hardy Perennials, Rock Plants, Alpines, Aquatics, etc.

J. CHEAL AND SONS, LTD., Crawley.—Dahlias, etc.

Foreign.

JOHN TELKAMP, Haarlem, Holland.—Bulbs and plants for summer bedding.

AYRES' NURSERY, Cape Town.—Bulbs.

A TOO CROWDED ADVERTISEMENT WEARIES THE EYE; ONE QUICKLY PERCEIVED IS BETTER THAN TWO NOT PERCEIVED AT ALL.

THE
Gardeners' Chronicle

No. 2203.—SATURDAY, MARCH 16, 1929.

CONTENTS.

Alpine garden—
  Alchemilla alpina ... 200
  Alyssums, some ... 200
  Anemone ranunculoides 200
  Pentstemon cristatus 200
Annuals under glass in U.S.A. 206
Apple trees, frost injury to 209
Books, notices of—
  Potatos immune to wart disease ... 206
  Starch in the service of plant and man 206
Chrysanthemums, disease in 208
Flower garden—
  Bidens dahlioides ... 200
Fruit-growing, national importance of ... 210
Fruit register—
  Apple Adams's Pearmain 211
Gaultheria hybrids in New Zealand ... 196
Gladioli in New England 195
Glasnevin, notes from 201
Hardy flower border—
  Campanula latifolia 200
Heath and Grassland Fires 197
Indoor plants—
  Clusia grandiflora ... 201
  Cyclamens 201
  Medinilla magnifica 201
La Selva, Nice ... 204
Lonicera hedges ... 208
Market fruit garden ... 211
Obituary—
  Davidson, Edward 214
  Veitch, P. C. M., V.M.H. 214
Plant history in nomenclature 204
Potatos, variety and cooking trials of ... 196
Primula, the genus ... 207
Richardson, Mr. A. D. 196
Royal Horticultural Society's Accounts for 1928 195
Salix lanata var. Stuartii 208
Societies—
  Professional Gardeners' 213
  Reading Gardeners' 213
  Royal Horticultural 212
  United Horticultural Benefit and Provident 213
Trees and Shrubs—
  Helichrysum Selago 200
  Umbellularia californica 200
Ward's, Mr. F. Kingdon tenth expedition in Asia ... 202
Week's work, the ... 198

ILLUSTRATIONS.

Apple tree, a Lane's Prince Albert, split by frost ... 210
Cephalanthera ensifolia 197
Cyclamens, a house of, at Moreton Paddox 199
Eucryphia cordifolia at Castlewellan 209
La Selva, Nice 197, 205, 207
Richardson, Mr. A. D. 196
Tetratheca thymifolia 201
Veitch, Peter C. M. V.M.H. 214
Ward's, Mr. F. Kingdon, tenth expedition in Asia 202, 203

SUPPLEMENT PLATE.

La Selva: Agaves and Brahea Roezli.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 42°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, March 13, 10 a.m. Bar. 30".6 Temp. 43°. Weather, Overcast.

Royal Horticultural Society's Accounts for 1928.

THE recently issued accounts of the Royal Horticultural Society for 1928, to which we referred briefly in our issue for February 23 (see p. 153), present some interesting points of comparison with those of the previous year, as well as some novel features which doubtless owe their origin, mainly, to the Society's recent outlay on bricks and mortar or, to be correct, reinforced concrete. The latter is doubtless responsible for the drastic reduction of the General Reserve Fund and of the Society's investments. The former, which stood at £37,600 in 1927, after touching high-water mark at £68,000 in 1926, is reduced to £5,049 10s. 0d. (cost), while the investments, which cost £45,841 0s. 6d., have been converted into cash, except £9,618 6s. 4d. worth of the three-and-a-half per cent. Conversion Loan of 1961. All the Society's investments were in trustee stocks, most of which were bought many years ago, and the loss on the sale of these stocks is entered at £2,087 5s. 4d. At the end of last year the total of the Society's "liquid" savings had been reduced to £14,667. Of the Society's funds, £84,000, in round figures, was spent on the new hall during 1928, making the total expenditure under that head to December 31 last £144,575 7s. 8d. Outlay in the new hall first appeared in the accounts of 1925, when £150 was charged to it, and for some time before that the Society had been putting money by for the purpose. Next year the figure had risen to £13,809 odd. In 1927, when building commenced in earnest, the expenditure had risen by £46,245 to £60,000 odd. Of the capital outlay on the new hall, a little short of £20,000 has been allocated to the plant for the new restaurant, its equipment and furnishing. The sale of the majority of the stocks in which the Society's savings were invested does not, of course, represent a loss of these savings. It is a transfer of the savings from their old form of "liquid" securities into a building, and in this new form the investment may possibly prove more remunerative than in the old. None the less, the building up of a liquid reserve fund will no doubt be resumed at the earliest moment; it was rightly a point to which paramount importance was attached by the late Rev. W. Wilks, to whose sagacious management the Society largely owes its present prosperity. As is inevitable in the case of a growing society, the establishment charges at headquarters show an increase which amounts to about ten per cent. on last year. The expenditure on the *Journal*, however, shows a reduction of £172, which coincides with an increase in the advertisement income of nearly £250. Economy seems to have been exercised in the purchase of books for the Lindley Library—a point on the wisdom of which there will be difference of opinion. There has been a drastic pruning of the expenditure on awards—prizes, cups and medals—which shows a saving of £565 on the previous year's outlay. During the year nearly £500 was expended on furnishings in the old hall and the offices, and there is an allocation of £88 17s. 0d. for a herbarium, which is presumably that which has been established at Vincent Square for hardy fruits. Last year saw a remarkable drop in both the expenditure on the Spring Meeting (Chelsea Show) and the receipts. The outlay fell by no less that £3,326 below that of 1927, to a few shillings short of £1,700, while receipts amounted to £1,011, showing an apparent loss on the Show of £687. It would be interesting to know how the saving in expenditure was effected, as there were no very obvious signs of a tightened purse at last year's Chelsea Show. In 1925 there was a profit on the Show of £673. In 1926 the profit rose to over £2,000, while in 1927 it was £1,644. Now that the Society has a sufficiently large hall of its own, the annually recurring outlay on the rent of an outside hall for the Autumn Show will disappear. In 1927, when the Autumn Show was held at the Holland Park Skating Rink for the last time, it cost the Society about £400, and, apparently, it has also been conducted at a loss. Of non-recurring items in last year's accounts, £400 is included as the cost of opening the new hall with befitting ceremony, and the International Exhibition of Garden Design depleted the Society's coffers by £2,630. That may, perhaps, be regarded as the cost of the inevitable "house warming." The item for "gratuities" has been swollen by £730, and if the major part of the increase is due to the honorarium voted to the late Mr. F. Reader on his retirement from the staff, none will grudge it. A new feature of the accounts is the inclusion of a profit and loss account for the restaurant and for the *Botanical Magazine*. The figures for the former are for the brief period from October 17 to November 30, 1928, and show a probably inevitable loss on the preliminary six weeks of £814. The *Botanical Magazine* is, we are glad to learn, self-supporting. Since it was built, the letting of the Vincent Square hall has been a substantial source of revenue to the Society, and after remaining fairly constant for some years at about £3,500, the revenue from this source rose suddenly last year to £4,179 nett. No doubt, during the present year the letting of the new hall will add materially to the Society's income, and it does not seem unreasonable to hope for a return of at least £10,000 annually from the letting of the two halls. In itself that will be no mean return on the Society's capital. The ground rent on the new hall is £1,200 a year. The balance sheet for the Wisley Garden is now over £15,000, and during 1928 there was an increase under various heads of expenditure and minor savings under others in comparison with the previous year. Salaries are more by over £500, labour by £655, and £629 has been spent on laboratory apparatus. Miscellaneous expenses are £400 up on the year. On the other hand, the income shows but a small increase, and excess of expenditure over income was, as stated in our issue for February 23, £12,000—the equivalent of a five per cent. investment on £240,000. We hope the Council will see its way to give a résume of the Society's finances in its Report for 1929, and one which will enable the Fellows to make comparisons with receipts and expenditure of other years, without wading through sixteen pages of figures.

Frost, Heat and Drought.—Up to the present it would appear that the year 1929, following the general vogue, is endeavouring to break all records so far as the weather is concerned. For February beat all cold records since 1895, and, as if to make amends, last week-end was the warmest and sunniest experienced in England during early March since 1870. Combined with this, we have not had rain for several weeks and plant life is in a dry and parched condition. A fortnight ago skating was being enjoyed throughout the greater part of the British Isles; last week-end people basked in the sunshine on the banks of lakes and ponds still covered with ice. The full tale of the damage done in gardens during the severe February weather has yet to be told, but reports received so far indicate widespread havoc.

The Marking of Imported Rose Trees.—The draft of an Order in Council to require imported Rose trees to be marked with an indication of origin in accordance with the Merchandise Marks Act, 1926, has been laid before Parliament, as required by Section 7 of the Act. The text of the draft Order in Council appears in the Board of Trade Journal for March 7, 1929, and copies of the draft Order may be obtained through any bookseller, or directly from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C. 2, and branches.

Show in Aid of Studley College.—With a view to raising money in connection with the national appeal on behalf of Studley College, a show and sale of flowers, fruits, vegetables and dairy produce is to be held at the Royal Horticultural Society's Hall, Vincent Square, Westminster, on April 25. The show will be opened by Princess Mary at midday.

Gladioli in New England.—The New England Gladiolus Society and the British Gladiolus Society appear to be engaged in friendly rivalry over the popularisation of Gladioli. The American Society, of which Mrs. A. C. Scott, of 93, Grant Street, East Weymouth, Massachusetts, is the Secretary, has issued a publication entitled "Advancement in Beauty," dealing with the work of the Society, containing many special articles and brightened by numerous illustrations in colour and half-tone, and although several of these appear to be in the nature of *quids pro quo* to advertisers, that does not detract from their interest and beauty. The principal articles include a discussion of "Colour Standards," by Dr. S. I. Moody; "Gladiolus Breeding," by J. A. Kemp; a report of the Society's Demonstration Plot, by Clark L. Thayer; Gladiolus Species, by F. Lazenby; and Gladiolus Characteristics, by

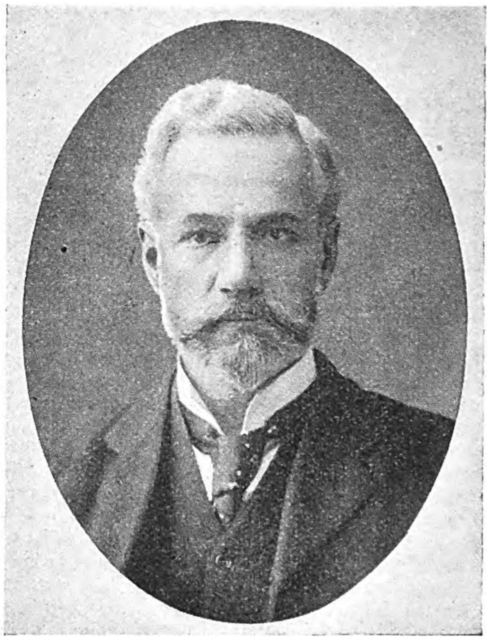
A. M. S. Pridham, of Cornell University. The exhibition held in August, 1928, is reprinted and illustrated. The double-page centrepiece of the book is a pleasing illustration of a new Gladiolus named The Orchid, this is pink and buff, with wavy segments; the raiser of this variety does not suffer from excessive modesty as he states (in the advertisement columns) that "millions will be demanded so soon as they can be produced."

Jubilee of a Horticultural Journal.—On March 16, *Gardening Illustrated,* the property of Messrs. Benn Bros., Ltd., Bouverie House, attains its jubilee. It was founded in March, 1879, by Mr. William Robinson, the doyen of English horticulturists, who also acted as its editor for thirty years. There are very few gardening papers which have reached the age of fifty years, and we heartily congratulate our contemporary. *The Gardeners' Chronicle* celebrated its jubilee in January, 1891, and will be celebrating its centenary in twelve years' time.

Legacies to Gardeners.—The late Mr. John Rowe Pope, J.P., of Trebartha, Wotton, Gloucester, who died on January 16, left £500 to his gardener, Mr. Clarke, if still in his service. —The late Rev. Sir John Caesar Hawkins, Bart., D.D., of Kelston Lodge, Banbury Road, Oxford, who died on January 18, left £20 and a life annuity of £52 to his gardener, Mr. Richard Miller, who had been in his service since 1863.

Retirement of Professor T. Echtermeyer.—For many years Director of the Prussian Training and Research Institute of Horticulture at Dahlem, Berlin, Professor T. Echtermeyer goes into retirement on April 1, 1929. He was born on October 23, 1863, at Marienburg, in West Prussia, and after completing his school education, took up gardening, attending from 1884 to 1886 the then Royal Institute of Gardening at Wildpark, near Potsdam. After a long and successful career at home and abroad, he was appointed in 1894 to the headship of the Wildpark Institute, which he continued to hold after its removal to its present quarters at Dahlem, and brought it, by his energetic and persevering endeavours, to the high position which it now enjoys. Professor Echtermeyer has a commanding personality, and has done much to assist the development and improvement of horticultural training in Germany. He was among the first to advocate the bringing into cultivation of waste lands, and to establish the small-holding colonies which have since proved so successful.

Gaultheria Hybrids in New Zealand.—Dr. A. W. Hill, Director of the Royal Gardens, Kew, exhibited a long series of Gaultheria hybrids at the recent meeting of the Linnean Society. The plants exhibited had been collected by Dr. Hill on Rainbow Mountain and Waimaro (North Island) and elsewhere, supplemented by specimens collected by Dr. Cockayne and others. These showed the gradual passage from Gaultheria oppositifolia to G. antipoda; from G. oppositifolia to G. rupestris, thence to G. perplexa, and a series of hybrids between G. perplexa and G. antipoda, and G. rupestris and G. antipoda. In connection with this remarkable series it should be noted that both G. oppositifolia and G. rupestris have a dry capsular fruit, and the calyx-segments do not become fleshy when the fruit ripens. In G. antipoda, however, the calyx becomes thick and fleshy as the seed ripens (although there is a well-matched form with a non-fleshy calyx), while in G. perplexa not only are the calyx-segments fleshy, but the fruit is a fleshy berry, exactly as in the genus Pernettya. The condition can be exactly matched in Pernettya Pentlandii from the Andes of South America. In G. oppositifolia and G. rupestris the inflorescences are terminal panicles and the stems are practically glabrous. The polyphormic hybrids with G. antipoda have the stems covered with strigose hairs, alternate leaves, and the flower arrangement varies from axillary panicles or racemes to solitary flowers in the leaf axils In some of the hybrids "fruits" were found with some of the calyx-segments fleshy and some dry in the same flower. In places where G. perplexa and G. antipoda (? G. depressa) grow together, as at Waimaro, it is very rare to find either species in the pure state. When G. rupestris hybridises with G. antipoda the progeny always shows a swollen, fleshy calyx. Most of the hybrid Gaultherias produce viable seeds. Gaultheria fagifolia, Hook. f., is one of the hybrid swarms of either G. oppositifolia × antipoda or of G. oppositifolia × rupestris. There is some evidence that the Gaultherias in Tasmania also hybridise, and G. lanceolata appears to be of hybrid origin.



MR. A. D. RICHARDSON.

Mr. A. D. Richardson. — No horticulturist is better-known in Edinburgh than Mr. A. D Richardson, who was born at Garvald, East Lothian, but was taken to Fifeshire when less than a year old. He received his early education at the parish school of Largo. His father had the management of the Largo estate for eight years, and then went to Midlothian to take charge of the Arniston and Polton estates of the late Sir Robert Dundas, Bart. At that time Arniston was one of the finest estates in Midlothian, its arboricultural features being of great interest, including some of the earliest planted Larches in Scotland. It was on this estate that James Brown was formerly forester, and where the first edition of his book, *The Forester*, was produced, in 1847. When Mr. A. D. Richardson left school, his ambition was to become a mechanical engineer, but lack of facilities compelled him to abandon the idea, and before he was fifteen, he had, under some parental pressure, to become an apprentice forester. Afterwards he gained experience of practical gardening, which then had a greater attraction for him than practical forestry. Many improvements were carried out on the Arniston estate, and it was in connection with these that Mr. Richardson acquired his first experience of practical landscape work, for which he further equipped himself by attending the three-months summer course in field engineering at the University of Edinburgh, under the late Professor Jenkin, and also, during the same period, by attending the University botany class at the Royal Botanic Garden, under the late Professor John Hutton Balfour. Mr. Richardson left Arniston and entered the service of a large public works contractor in Edinburgh, where he gained an experience which has been of great value in connection with the practical operations of landscape gardening. Early in 1880 he was invited by the late Mr. John Sadler, the Curator of the Edinburgh Royal Botanic Garden and arboretum, to become his general assistant, with special charge of the arboretum. At that time, the Arboretum —the land for which was purchased by the Edinburgh Corporation and transferred to the Government—was intended for a Scottish School of Forestry, and was placed under a separate Government Department from the Garden, and thus remained until the passing of the Scottish Universities Act, in 1888, after which both were placed under the administration of H.M. Office of Works. Mr. Sadler died in December, 1882, and was succeeded in the Curatorship by Mr. Robert Lindsay, who had been the general foreman of the Botanic Garden for many years. On the death of Professor Alexander Dickson, the Regius Keeper of the Garden, in 1887, the late Sir Isaac Bayley Balfour was appointed Regius Keeper of the garden and arboretum, and soon after his appointment the remodelling of both the garden and arboretum, which hitherto had been separate entities, was taken in hand, and the garden was also thrown open to the public on Sundays, as the arboretum had been from the first. This involved a complete rearrangement and reconstruction of the walks and grounds to accommodate the large crowds which visited the gardens on these days. Mr. Richardson became general foreman of the garden and arboretum, the present Curator, Mr. Harrow, being in charge of the under-glass department. In this remodelling, Mr. Richardson took a large part. Mr. Lindsay retired from the Curatorship in 1896, and was succeeded by Mr. Richardson, but in 1902, after a continuous service of twenty-tw years, he resigned in order to take up genera landscape gardening and advisory work, in which he has since been engaged. He became a member of the Royal Scottish Arboricultural Society in 1873, when an apprentice forester, and there are now but six members in the Society who were on the roll at that time. He took part in the first foreign excursion of the Society, to north Germany, in 1895, and subsequently to Sweden and France. His experience of the German excursion gave him, as it did to all the practical foresters present, an entirely new conception of what commercial forestry really meant, for at that time scarcely any of the practical foresters of this country had seen anything of Continental practice and methods. Mr. Richardson sub-edited the *Transactions* of the Society while the late Mr. John Nisbet was honorary editor, and also for some time during Colonel Bailey's honorary editorship. He also acted as Secretary and Treasurer to, and Editor of the *Transactions* of the Scottish Horticutural Association from 1906 until its incorporation by the Royal Caledonian Horticultural Society in 1921, a period of fifteen years, and served on the Councils of the Royal Scottish Arboricultural, the Royal Caledonian Horticultural and the Edinburgh Natural History Societies. Mr. Richardson was elected an Associate of the Edinburgh Botanical Society in 1883, and awarded the Neill Prize in Horticulture, as a botanist, in 1916—altogether a goodly record and one to be proud of.

Roses for Trial at Wisley. — The Director of Wisley asks us to remind raisers of Roses that six plants of each variety for trial should reach him at the R.H.S. Gardens, Wisley, Ripley, Surrey, by the end of March. Each variety requires an entry form, copies of which will be sent on application to the Director.

Variety and Cooking Trials of Potatos.—Since 1917, the Agricultural Department of the Lancashire County Council has conducted a series of trials to compare the yields and cooking qualities of important established varieties of Potatos with the more promising of the newer varieties as they appear. Six varieties were tried in 1928, these, with their average yield per acre being :—Kerr's Pink, 11 tons 4½ cwts.; Arran Victory, 10 tons 4¾ cwts.; Arran Consul, 9 tons 9¼ cwts.; Field-Marshal, 9 tons 2¼ cwts.; Ben Cruachan, 8 tons 8½ cwts.; and Majestic, 8 tons. A hundredweight of "seed" of each variety, from the west of Ireland, was planted at each of five different centres. Kerr's Pink is described as the most widely-grown maincrop variety in Lancashire, and is grown in these trials each year as a standard; in cooking qualties it is equal to Field-Marshal and King Edward, and second to Arran Victory. Arran Victory, although second in total yield, gave the largest proportion of ware tubers of the varieties grown; when cooked, all traces of blue coloration vanishes, and it was placed first in the cooking tests for flavour, texture and colour. The flavour of Arran Consul, when boiled, is stated to be similar to that of Kerr's Pink, but it is lacking slightly in colour and texture. In the cooking test Field-Marshal, a late, non-immune variety, was yellow in colour, although excellent in flavour and texture, while the colour and flavour of Ben Cruachan were moderately good, but in texture it compared poorly with all but Majestic, which, when cooked, gave very poor results, being the only one to begin to go black while it cooled.

Fatal Accident to a Belgian Nurseryman.—M. Ernest Haumont, Director of the well-known nursery establishments of M. Eugène Draps, at Uccle, near Brussels, was killed recently by being crushed by the back wheel of a lorry. The road was slippery and the lorry skidded, with the sad result that M. Haumont, as stated above, was caught by the wheel before he could get away. He was taken to the St. Jean Hospital, and was thought to be on the way to recovery, but an operation had to be performed, and he passed away. The deceased, who was fifty-eight years of age, was a valued employee, and had been successively in the service of the firms of Linden, Pauwels and Draps.

R.H.S. Gardens Club Journal.—Students and employees at the R.H.S. Gardens, both past and present, will welcome the appearance of the Club *Journal*, edited by Mr. J. Fraser, F.L.S., V.M.H., for this journal always makes interesting reading. The 1928 issue is not lacking in this respect, and among the articles of especial interest are Mr. G. Fox Wilson's account of the Fourth International Congress of Entomology, held in the United States last year; an interesting description of visits to Dutch nurseries by Mr. K. Therkildsen; an account of the Club's outing to Brighton on July 14 last, by Mr. G. L. Knight; and an original article entitled "Local Weather Forecasting," by G. Edmund Hindley. In such a publication as this the "Extracts from Correspondence" are always of interest, as also are the "Personal" notes. Under "Obituary" the deaths of Frank Reader, and of George Smithers, whom all past Wisleyites will remember, for he was employed at Wisley prior to the Royal Horticultural Society taking possession of it and at the time of his death was leading hand in the wild-garden department. The frontispiece is a reproduction of the portrait of the late Mr. Frank Reader, which appeared in *The Gardeners' Chronicle* at the time of his death.

Paris Spring Show.—The Société Nationale d'Horticulture de France is making arrangements for its annual Spring Exhibition, to be held in Paris, on the Cours-la-Reine site, from May 24 to June 2, inclusive. On Saturday, May 25, the annual horticultural Congress will take place in the large hall of the Society in the Rue de Grenelle, beginning at 9.30 a.m. As evidence of the increasing popularity of the Dahlia as a decorative garden plant and as a cut flower, it may be added that the Society is organising a Dahlia Section among the members for the study of methods of cultivation, raising of new varieties, etc. The first meeting of the Section was held on January 24, under the presidency of M. F. Cayeux.

Grants by the Agricultural Development Commission.—The following grants, among others, were recommended by the Advisory Committee on Agricultural Science, at its meeting on January 15, and have since been approved by the Development Commission:—£25 to Mr. W. E. H. Hodson, of Seale-Hayne Agricultural College, for a visit to Holland to study methods of control of pests and diseases of the Narcissus and other bulbs; £30 to Mr. Morley Davies, of Harper Adams Agricultural College, to enable him to attend a meeting of the International Commission of Soil Science at Köningsberg, and to visit the Sugar Beet Station at Kleinwanzleben and Sugar Beet growing areas; and £100 to Dr. E. M. Crowther, of the Rothamsted Experimental Station, to enable him to attend Commissions of the International Society of Soil Science at Budapest and Königsberg, and to visit leading research laboratories dealing with soils and fertilisers in Germany, Austria, Hungary, Czecho-Slovakia and Denmark.

Seeds for Distressed Miners.—Following a joint appeal by Mr. Leonard G. Sutton (Messrs. Sutton and Sons), and Mr. William Cuthbertson (Messrs. Dobbie and Co., Ltd.), some 76,250 packets of seeds have been promised by seedsmen throughout the British Isles for distribution to miners in the distressed areas.

Heath and Grassland Fires.—Owing to the abnormal dryness of the vegetation, there were many outbreaks of fire last week-end; among the places where these occurred being Ashdown Forest, Hayes Common, Chislehurst, Mitcham, Downham Estate, Bromley; Alderstead Heath, Chobham, Headley Heath, Ashtead, Brooklands, and on the Sussex Weald. The most dangerous fire was at Brooklands. On the Sunday afternoon eight different fires were counted on the Sussex hills. Several parts of Ashdown Forest were also ablaze, but these fires burned themselves out without doing much damage, and more than three acres of Hayes Common were burned. A considerable area of Aldershot Heath was burned, and acres of Fir trees and shrubs were destroyed by fire at Hall Barn, Beaconsfield, Lord Burnham's estate. A large area of Chobham Common was ablaze on the Saturday evening, and still alight on the Sunday morning, while a mountain Gorse fire occurred at Hollywell, North Wales, and extended over an area of four square miles.

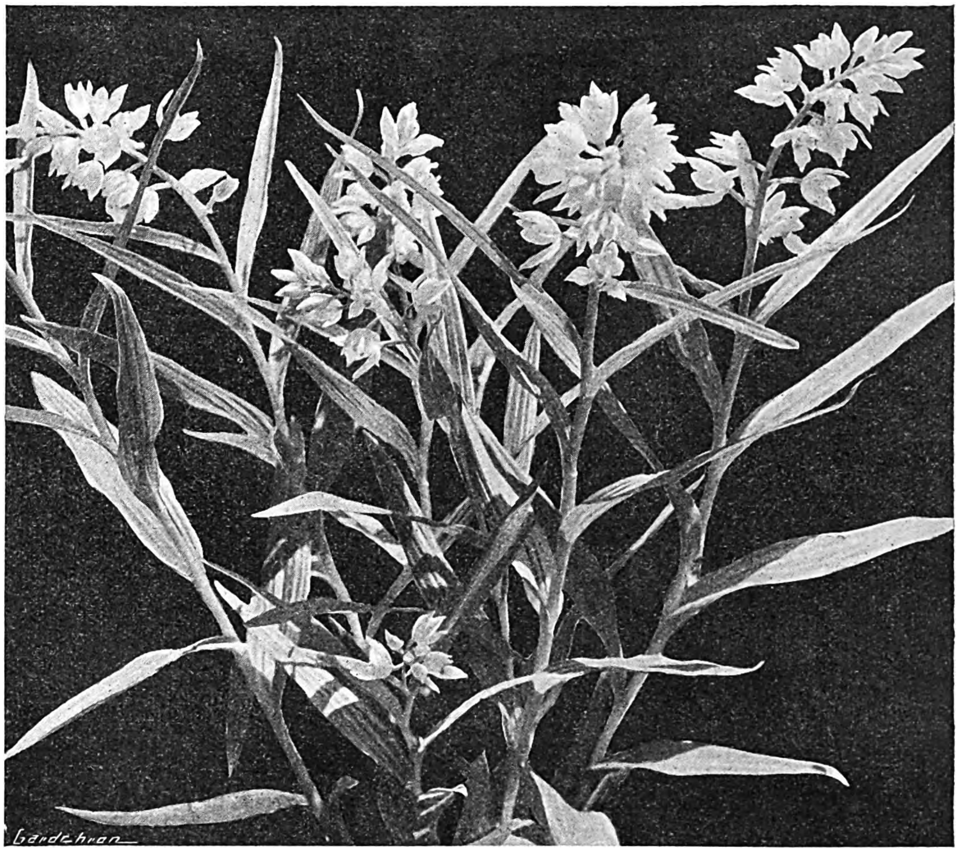


FIG. 95.—LA SELVA: CEPHALANTHERA ENSIFOLIA.
(see p. 205.)

Appointments for the Ensuing Week.—MONDAY, MARCH 18: East Anglian Institute of Agriculture lecture. TUESDAY, MARCH 19: Winchester Horticultural Society's meeting. WEDNESDAY, MARCH 20: Wimbledon and District Gardeners' Society's meeting; Tamar Valley Commercial Show. THURSDAY, MARCH 21: Ipswich Gardeners' Association's meeting; Sundridge and Brasted Horticultural Society's meeting. SATURDAY, MARCH 23: Leeds Paxton Society's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Meudon Strawberry.*—My gardener induced me, last November, to let him advertise this valuable fruit in his own name, for the benefit of the school in which he was brought up; but as there is often much charlatanry in use on such occasions, people are chary of giving confidence where pretensions to merit are not well authenticated. I feel strongly the advantage the gardening public would derive from the cultivation of this Strawberry, and herewith beg to give you its history. Meudon, as you know, is one of the Royal Palaces near Paris. Its garden, at the time I speak of it, was occupied by a horticulturist, who gained much celebrity in the *Chronicle* by his successful mode of growing Pineapples in peat. Being curious to witness the fact, I visited Meudon, and found all that had been stated realised. But I at the same time saw what France heretofore did not possess of its own, viz., a splendid looking Strawberry, which was being forced on shelves at the back of the Pine pits. The gardener told me it was one of his own raising, and seeing how abundantly it bore in small six-inch pots, and how beautiful it looked, I induced him to let me have one plant out of the small stock he possessed. I brought it home with me to England, and the stock I now have of what I call the Meudon Strawberry is derived from this single plant. The fruit is as large as that of Keens', but conical and of light red—solid, juicy and sweet, with a quick flavour; excellent for dessert or preserving, and an abundant bearer under all treatments. My gardener has a considerable stock of this Strawberry left for disposal in small quantities, in order to its more general dispersion, as I should be heartily glad to see it become one of the staple plants for general cultivation, and I thus willingly lend the good man my advocacy, accordingly. *Wm. Mason. Necton, Norfolk. Gard. Chron., March* 18, 1854.

Publications Received.—*Einjahrsblumen*, by Paul Kache and Camillo Schneider; Berlin, Westend, Verlag der Gartenschönheit; price-paper, M.9.50; bound, M.12.00.—*Dahlias*, by F. F. Rockwell, pp. 85; The Macmillan Company, New York and London; price 4s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE, Manchester.

Masdevallias.—The Chimaera section of Masdevallia, that contains such interesting sorts as M. radiosa, M. bella, M. Wallisii, M. Chestertonii, M. Carderi and others, which have been growing at the cool end of the intermediate house during the winter months, generally require some attention at the roots in the early spring. The plants are best grown in Teak-wood baskets, in a compost of three-parts Osmunda fibre and one-part Sphagnum-moss, with charcoal added. This should be made moderately firm among the roots, the rougher parts of the compost being used for drainage (in preference to broken crocks or other hard material) to allow the flower spikes (which are often produced in a downward direction) to pass through without injury. Annual disturbance is not necessary, provided the compost does not become impoverished; if this occurs the plants should be removed from the receptacle and all the old soil and decayed roots removed, replanting them in a basket of suitable size. Water will only be needed in small quantities as the soil becomes dry, until the roots are well established, when an increased quantity may be given. During their active season of growth, these Orchids should not remain dry at the roots for long periods. Maintain a moist and buoyant atmosphere and shade the plants from strong, direct sunshine. During the summer months these Masdevallias may be grown in the cool house, together with the dwarf-growing kinds, which include such interesting forms as M. ionocharis, M. ludibunda, M. simula, M. triaristella, M. tridactylites, M. O'Brieniana, and several other free-flowering sorts, some of which have been in flower most of the winter and will require fresh rooting material as the season advances. These dwarf Masdevallias only require a small quantity of compost to root into, and are best grown in small, well-drained pans, which may be easily suspended from the roof. Stronger-growing sorts, notably M. coccinea and its numerous varieties, and the beautiful, winter-flowering M. tovarensis, are best grown in well-drained pots. Specimens that have lost their leaves in the centre should be broken up and all dead roots and leafless rhizomes removed, each lead being repotted separately, or several arranged together. Keep the base of the plant just below the pot rim and just in contact with the compost, which should be made firm among the roots. Ample room is thus allowed for copious watering during the growing season. An excess of moisture during the winter months will cause the roots of these Orchids to decay and the leaves to fall, but later in the season, during hot weather when the plants are rooting well and growth is active, ample moisture is needed, and occasional light spraying of the foliage is beneficial, air being admitted on all favourable occasions. Thrips should be kept in check by occasionally fumigating the division on quiet evenings, or by spraying the plants at regular intervals on fine, clear days, with a weak solution of an approved insecticide. The flowers of some kinds are easily damaged by nicotine spraying or fumigating, especially M. muscosa and M. tovarensis, which are best removed during this operation, if in bud or flower.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

General Work.—Although the weather has not been favourable, until the last two weeks, fruits in the earliest house have set well; such success is due to keeping the atmospheric conditions right, by maintaining a night temperature of 50° to 55°, with a small amount of air admitted, both night and day, the atmosphere being kept comparatively dry. Pears and Cherries are the most shy setters, especially in cold houses, and both these require a dry atmosphere, kept in motion by the admission of air. The earliest pot trees of Peaches and Nectarines which have been disbudded and the fruits thinned, should have any shoots which are too long shortened or removed as desired; the best fruits are obtained from the boldest flowers near the base of the growths. As a rule, two good growths, one from the base and the terminal one only need be left after disbudding, nearly all the intermediate shoots being removed in due course. Top-dressing is a very important matter, as it is practically impossible for trees growing in a cubic foot of soil to mature a crop of fruits without being top-dressed and fed with liquid manure. The top-dressing material should be prepared in advance and afforded in small quantities frequently from the time the fruits set until they attain full size. Feeding with weak liquid manure is most useful when the stoning period is reached. Late trees comprising a mixed collection, will now present an interesting appearance, especially where flower buds are plentiful and dropping has not marred the prospect of a good crop of fruits. Pears, Plums and Cherries will not withstand hard forcing, therefore the house must be ventilated liberally day and night, ripening of the fruits under the influence of summer heat being the most important consideration. A temperature ranging at about 45° at night, and 55° to 60° by day, and plenty of air admitted, should ensure the free setting of fruits of these subjects without the aid of fire-heat, but always bear in mind the fact that a damp, stagnant atmosphere when these trees are in flower is quite as injurious to them as frost: therefore, fire-heat should be at command to ensure a brisk, buoyant temperature. Trees must be watered regularly every morning, but, as the season advances, this operation may be performed after the house is closed for the day. The trees may be syringed lightly until they come into flower, but when this stage is reached a dry atmosphere and a low temperature should be maintained at night, but a fairly brisk heat during the day, with a free circulation of air, is favourable to fertilisation. Daily distribution of the pollen with a rabbit's tail will aid the process and when the fruits are set syringing and early closing of the house should be practised. Having in my previous notes drawn attention to the damage that may be done by green fly, it is hardly necessary to state that the house should be well fumigated before the trees come into flower.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Bedding Plants in Frames.—Sweet Peas, Pentstemons, etc., that have been wintered in cold frames, should have abundant air on every possible occasion. The lights should be removed entirely during the day, if bright, dry conditions prevail.

The Rock Garden.—Owing to the prolonged period of hard frost, the majority of plants in the rock garden are still dormant, except in the milder districts. Whenever weather conditions permit the rock garden should be attended to, removing decayed leaves that have gathered in the recesses, and which, if left, act as a harbour for slugs, and soon set up decay in plants when wet weather prevails. Attention should also be given to recently planted rock plants. It is well-known that frost has a tendency to lift newly-planted subjects partially out of the soil. Therefore, with the return of more genial conditions, all should be gone over and made firm; if the existing soil is wet and sticky, it will be beneficial to surround the plants with a compost of dry material, such as old potting soil, before firming them. The annual top-dressing of established groups of alpine plants has been delayed; this matter should be attended to so soon as possible, for it is an important factor in the welfare of many of our choice alpines. For the majority, a mixture of good loam and leaf-soil, with an abundance of grit added, will be found suitable, but special mixtures for those requiring peat or lime should be prepared.

Early-flowering Chrysanthemums.—Continue the propagation of these useful plants. Cuttings will root freely at this season, with very little bottom heat. When rooted and potted into three-inch pots, they should be left for a week in a house or pit with a medium temperature until they become established, after which they should have the protection of a cold frame until the weather becomes more genial, when they may be placed in a sheltered corner in the open, preparatory to planting them out. No plants give a better display than do the early-flowering Chrysanthemums where large beds have to be furnished in the autumn; furthermore, they may be grown in the reserve garden or nursery during the summer, and lifted and planted in the flower garden when their flower buds are opening, without showing signs of distress. Where this plan is adopted, it is well to incorporate a plentiful supply of humus as a rooting medium; leaf-soil or decomposed vegetable matter will do, but I have found nothing to compare with spent Hops for getting that close ball of fibrous roots which is so essential if the transplanting of fully developed plants is to be carried out.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Chief Assistant Lecturer, Reading University Horticultural College.

The Fig.—Fig trees on walls that were left unprotected during the recent frosts have suffered badly, and it may be difficult, as yet, to determine to what extent the younger shoots have been injured. Shoots that are badly crippled should be cut out entirely, if they may be spared, otherwise the damaged points should be shortened to an uninjured bud. The embryo fruits can now be seen, and the pruning must be regulated so as to preserve so many of these as possible. The training, of which the fan system is best, allows a space of six inches between each shoot, and this will permit the young growths to be laid in later where necessary. Crowding is fatal to success, as it prevents the sun and air entering freely, which is necessary to ripen the wood. Trained Fig trees that have been making too much growth, at the expense of crop, should be root-pruned. The distance from the base of the tree for the opening of the trench must be governed somewhat by the age of the tree. This trench should be made deep enough to get below the root-system, and all roots should be severed by clean knife cuts sloping from the undersides upwards. When the roots have been cut, the trench should be refilled with a mixture of good turfy loam, and a liberal allowance of old mortar rubble, broken bricks and wood ashes, and the whole made very firm by ramming. This firming should result in a shorter-jointed top growth and subsequent fruitfulness. Copious supplies of liquid manure, and mulchings may be applied when the fruits are swelling.

Cob Nuts and Filberts.—Filberts may be distinguished from Cob Nuts by the greater length of husk and by the shape of the fruits, which is more or less oblong. Cob Nuts are round, or obtusely ovate, and the husks are generally shorter than the nuts. The varieties Cosford, Pearson's Prolific and Merveille de Bollwiller may be taken as examples, although Kentish Cob (syn. Lambert's Filbert) has husks much longer than the nut. The propagation of these is by seeds and suckers. The latter is the chief method of increase, as suckers with good roots are produced in quantity from the base of established trees. These rooted suckers should be planted three feet apart each way in nursery rows, and allowed to remain there for two years. They should be headed back to two feet from the ground and the frame work of branches built up in much the same manner as with the bush Apple. They may then be planted out in their permanent positions ten to twelve feet apart each way. The Nut family thrives best in well-drained, stony soil on hill-sides where full exposure to sun and air may be enjoyed. Deep, rich soil causes the bushes to make too much wood, which is a sure source of unfruitfulness. Low, flat and damp sites should also be avoided.

Pruning Nut Trees.—March is the best month in which to prune Nut trees, as by this time the female flowers can be seen. They are comparatively inconspicuous, being merely tufts of crimson styles protruding from the buds. The leader growths should be shortened to induce the formation of side-shoots or spurs. The lateral growths are shortened to a female bud or buds, and a sufficient number of catkins should be left throughout for purposes of fertilisation.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN,
Brocket Hall, Hertfordshire.

Gloriosa superba and G. Rothschildiana.—Where a good stock of these so-called Spider Lilies is available, a number of the tubers should be turned out of their receptacles and repotted into the pots in which they are to flower, while those that are to form a succession should be allowed to remain as they are for several weeks and should be kept dry at the roots. The transference of the tubers into fresh compost should be done with extra care, as they are very brittle. Gloriosas require a rich, open compost. Single tubers may be grown in seven-inch pots, or several may be grown in receptacles nine inches in diameter. After potting, care is necessary in watering until growth is active. A moist, warm atmosphere is essential for the cultivation of the Spider Lily and, if grown in light shade, long flower stems will be produced, which is an advantage if the blooms are to be used for table decoration.

Campanula pyramidalis.—This Campanula makes an excellent pot plant for decorative purposes, and may be had in flower over a long season during the summer months, when large flowering plants are none too plentiful. To obtain good plants for next season, the seeds should be sown now in a light, open compost, covering them very lightly and placing them in a warm house. When the seedlings appear the receptacles should be placed on a shelf near the roof-glass, and so soon as the seedlings can be handled they should be pricked off into small boxes, subsequently growing them on under cool conditions in pots, or planted out in the open ground, from which they may be lifted and potted in early autumn.

Clivias.—Plants that have been kept somewhat on the dry side may now be watered more freely and fed liberally with liquid manure to induce the production of good flower spikes. Clivias resent frequent repotting and, when this is necessary, it is best done after the plants have flowered. Unless large specimens are desired, they will be found most useful when grown in as small pots as possible. As a rule, Clivias are grown in the same receptacle for several seasons, therefore, when repotting, it is best to wash all the soil from the roots. Plants in good health produce roots in abundance, and consequently make repotting a rather difficult task. Care is necessary not to damage the fleshy roots, for they are apt to decay when injured, and water must be given sparingly until root action is again proceeding. The plants may be syringed lightly, but not too frequently, otherwise the soil will become saturated. Seedling plants may be potted on if necessary, and choice varieties may be propagated by division.

Aspidistras.—Good specimen Aspidistras may now receive a top-dressing of light, rich soil, to which bone-meal has been added, but before proceeding with this work remove a little of the top soil. Other plants may be divided up, and young, healthy specimens potted on, using a compost of two-parts fibrous loam, one-part leaf-mould, and one-part silver sand; water carefully until growth is active again.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER,
Knowle Gardens, Dunster, Somerset.

Onions.—When the weather is suitable, the ground that was previously prepared for Onions should be forked over and, if in a dry condition, levelled and trampled both ways to make it firm. Some growers firm the soil for Onions with a light roller, but if the ground is of a heavy nature, the surface will get so hard during the summer that it will crack badly if so treated, and it is therefore better to maintain a loose surface, which may be hoed frequently. The Onion seeds should be sown thinly in drills drawn fourteen to sixteen inches apart and about two inches deep. If the seeds are sown thickly the resultant plants will be spindly and weak. Among the many varieties of Onions now on the market, none give more satisfactory results than Ailsa Craig and Bedfordshire Champion, provided they are sown early and treated generously. If the bulbs are properly harvested and are stored in a dry, airy shed, they can be had in good condition well on into April, or even May, of the following year.

Cauliflowers.—If seeds of Cauliflowers were sown in boxes or pots some four weeks ago, the seedlings should now be ready for pricking off into frames or boxes, in a compost of sandy loam. Keep the frames closed for a few days until the young plants obtain a root-hold in their new quarters, and, during sunny weather, shade them during the middle part of the day, when the sun-heat is strongest. Admit air sparingly at first, gradually increasing the supply as the plants become established and active in growth. Plenty of mats should be kept handy in case of night frosts. Cauliflower seedlings are easily ruined with too much water, therefore the compost should be kept rather on the dry side until they become firm of stem and hardened.

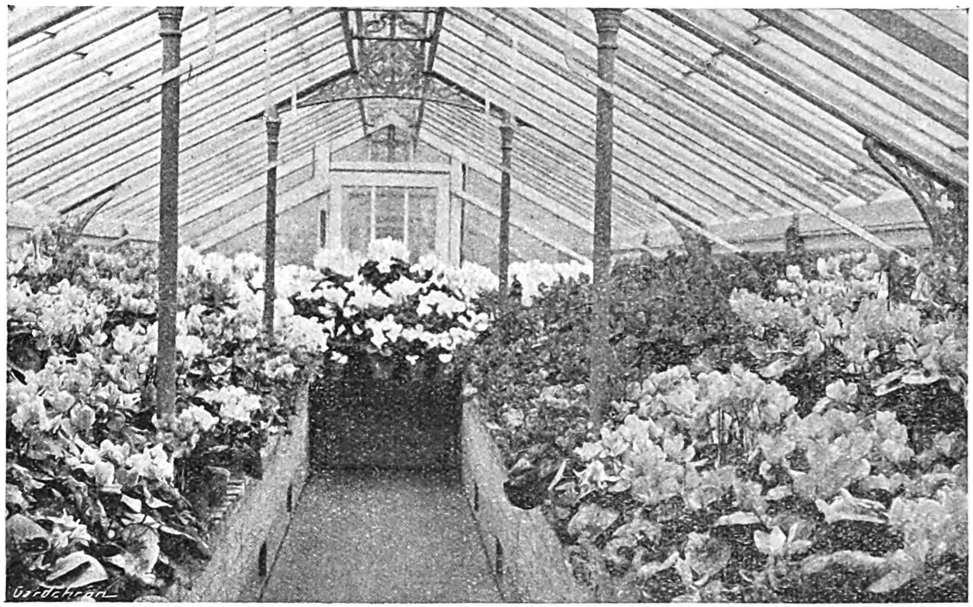


FIG. 96.—HOUSE OF CYCLAMENS AT MORETON PADDOX.
(see p. 201).

Peas.—Another sowing of Peas may be made, preferably of a dwarf variety; The Sherwood and The Laxton are two good sorts for this purpose, but as the abilities of the varieties differ according to the types of soil and conditions, the selection of them must be left to the individual grower's discretion.

Sowing Brassicas.—The ground on a south border should be prepared and sowings made of early and late Cabbage, Savoys, Brussels Sprout, Cauliflower, Scotch Kale, Broccoli, Kohl Rabi, Cos Lettuce and Cabbage Lettuce. When the seeds have been sown and if birds are likely to be troublesome, place a net over the bed.

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq.,
Rosemount, Monkton, Ayrshire.

Early Vegetables.—Where a well-sheltered border, with a southern aspect, is available, a small sowing of Early Horn Carrot and Early Milan or another early Turnip should be made. Parsley, Leeks, Brussel Sprouts, Cauliflowers, etc., should be sown to succeed those raised under glass. Salads, such as Lettuce and Radish, may now be sown in the open at intervals of ten days or so. The first sowing or, perhaps, two, of Turnip and Radish may be lost through frost, but it is worth the risk.

Celery Trenches.—No time should be lost in opening the Celery trenches, so that they may be available for hardening-off plants of flowers or vegetables in boxes or pots; the ridges alone provide a great protection, and a few branches or such like placed above will ward off frost.

Strawberries.—The young Strawberry plants in nursery lines do not look very bright at present, but whenever fresh growth shows, they should be planted in their permanent quarters. Fairly heavy soil suits this crop, provided it is well and deeply worked, manured liberally and allowed to consolidate before planting. Whatever method is adopted in planting, the roots should not be doubled up, but spread evenly, working some fine soil among them, afterwards making the soil about them quite firm. The distance at which they are planted must be regulated by the variety, and the soil in which it is grown; some light soils permit of placing the Strawberry plants one foot apart in rows two feet apart, while on strong land thirty inches by fifteen inches apart is quite close enough. As a first early Strawberry, I have found John Ruskin do admirably in many different districts and soils, but only if treated as a yearly crop, mildew being troublesome in the second and succeeding years.

Frost Screens on Walls.—When Apricots and Peaches show signs of opening their flowers, means should be taken to protect them from frost. If proper screens are not available, a double or treble thickness of fruit-netting serves the purpose, and this need not be removed until the fruits have set. Keep the nets clear of the trees by means of a few stakes driven into the ground about a yard or so from the foot of the wall, and secure the nets to prevent damage during wind. Plums and Cherries should also be attended to as they reach the flowering stage, especially those on east and south-east walls.

TREES AND SHRUBS.

HELICHRYSUM SELAGO.

This curious little New Zealand shrub has exceeded all expectations regarding its hardiness, a plant nearly ten years old still flourishing in spite of the recent severe frosts and those of last winter.

H. Selago is a densely twiggy bush of about nine inches in height, the slender branches, with their tiny, close-set leaves, having the appearance of whip-cord plaited in green and silvery-grey. It has occasionally produced a few white flowers, but these are too insignificant to be of any garden value. H. Selago claims a place in the rock garden, both as an interesting curiosity and as a diversion among other dwarf shrubs. It never fails to attract attention, for it is so wholly unlike anything else. The poorest of soil seems to be all it needs, and it appears to be indifferent as to whether it is in sun or shade. My plants have always maintained a neat, well-rounded form, and the oldest of them, whose age is referred to, is not more than one foot across. Propagation is by no means difficult, cuttings striking readily in the later summer. *J.*

UMBELLULARIA CALIFORNICA.

This subject, the Californian Laurel, and for some time known as Oreodaphne californica, is a native of north-west America, where it was found by Douglas and described as forming the greater part of the forests of California and Oregon. There it frequently grows to a height of one hundred feet but, although it is hardy in the south of England, the height attained here rarely exceeds thirty feet. In the younger stages it is slow-growing and forms an excellent evergreen shrub for the back of a sheltered shrubbery. A moist, deep soil is preferred, and it will withstand lenient pruning.

The leaves are alternate, lanceolate, and tapering at both ends; they are highly aromatic and volatile. The scent of the leaves is very like that of camphor, and if it is inhaled heavily it causes sneezing, and I have heard that it produces glandular swellings on the neck, but this can scarcely be credited because, in America, the leaves are used for flavouring soups.

The flowers, which are borne in umbels in April, are yellowish-green, and the fruits are about an inch long, roundish-oval and green, becoming purple. There is a line-drawing illustrating it in Bailey's *Cyclopedia of Horticulture*, and it is also figured in the *Bot. Mag.*, t. 5,320. *H. S. B.*

ALPINE GARDEN.

SOME ALYSSUMS.

A. saxatile is a fine old rock plant, and still among the best in spite of novelties, but the variety A. s. var. citrinum is not less meritorious. This has all the hearty, willing nature of the type, but the luminous, citron-yellow of its blossoms is distinctly its own. I do not know another yellow in the garden which "goes" quite so well with soft lavender-blue as that of this variety, unless it be its namesake among the Hypericums, H. olympicum var. citrinum. The double-flowered form of A. saxatile ought to be a good thing, and doubtless it is under some conditions, but in my hungry soil it does not seem to have enough vigour to make much of a success. The compacta form fails in the same way, but it is just possible that both of these are somewhat eclipsed by the glory of their bigger relations.

A. idaeum is an attractive little plant, small and frail enough for a stone trough or choice place in a dry moraine. Its grey, slender, prostrate shoots, with narrow, pointed, silvery leaves, terminate in clusters of flowers in a clear yellow. This species seems hardy enough, but A. atlanticum suffered severely during recent frosts. The latter is a more compact, semi-prostrate plant with small, spoon-shaped green leaves covered with silvery hairs. Its golden-yellow blossoms make a striking patch of colour on a sunny ledge for many weeks in spring and early summer. A. alpestre is another of these hoary Madworts, its development known as A. serpyllifolium being one of the most pleasing of its many forms. This is also a useful subject for a pig-trough collection of sun- and dry-loving dwarfs. Its tiny leaves are frosted with grey hairs, but the flowers are rather a weak yellow. A. Moellendorfianum, which appears to be a Bosnian form of A. montanum, is silver-scaled in leaf and branch, a loose-habited, trailing plant which seems absolutely immune to wet and frost. Its coronets of pale canary-yellow, over an inch across, make quite an attractive show, and it flowers here more or less all the season.

A. Wulfenianum I once had, and it has not yet been replaced, although many are the base imposters who have arrived proudly bearing its name. This charming plant is a trailer, much after the way of A. idaeum, but it is larger and the leaves are considerably broader and rounder. All parts are silvered and the comparatively big blossoms are a peculiarly brilliant golden-yellow. This is an Alyssum that is worthy of a seat in the stalls of any sunny scree bed of really choice subjects. Most of these plants are lime-lovers, but that element does not appear to be at all essential. They seem to be much more fastidious regarding the sharpness of the drainage, and full exposure to sun is very necessary.

PENTSTEMON CRISTATUS.

That the plant being distributed under this name has a right to its label seems doubtful. It is much like the better-known P. Davidsonii in general appearance, making a squat little bush of hard, angular branches, which are well-furnished with evergreen leaves of a bright and lustrous green, but without so decided a glaucous hue as those of P. Davidsonii. The trumpet-shaped flowers, which are hardly so large as those of the latter, are a brilliant amethyst-crimson, and borne profusely during the later spring and early summer. The plant does not exceed three inches in height, and is quite reasonably hardy. Like the rest of its class, it does best in a stony, rather poor soil, and should have full sun. P. cristatus is reputed to be one of the parents (the other being P. Davidsonii) of the very attractive, P. Six Hills Hybrid. *A. T. J.*

ALCHEMILLA ALPINA.

Of the various alpine plants that are grown for the beauty of their foliage rather than for any floral decorativeness, Alchemilla alpina is one of the most charming, for it forms close masses of leaves, each consisting of from five to seven leaflets which have serrated margins and derive their charm from the silvery, silky covering on their undersides; its flowers, small and greenish, and produced in June, are insignificant. It is one of our native plants, being not uncommon in the Lake District and, to secure the most pleasing effect, should be planted in a warm, sunny position. A. alpina is especially charming when viewed early in the day, when the drops of dew which cling to the ciliated margins of its leaves glisten and sparkle in the morning sun; when so seen, A. alpina has indeed a fairly-like charm. There is a variety major, larger in all its parts and heavier in appearance—a doubtful improvement on the type.

ANEMONE RANUNCULOIDES.

For naturalising in the wild garden or for furnishing the rock garden, this dwarf, small, yellow-flowered Anemone, whose blooms are very suggestive of the Buttercup, may well be employed, for it is free-growing and will brighten the garden early in the spring, its blooms being produced freely during March and April. But on the rock garden it should be planted with care, for when once established it will spread rapidly, after the manner of the Wood Anemone, and will, if planted near them, encroach upon the more aristocratic subjects and rob them of their nourishment, and then, when attempts are made to bring A. ranunculoides within bounds again, much difficulty will be experienced, for it is by no means easy to eradicate, and every tiny tuber left will, perforce, develop into a plant, therefore, in the rock garden, A. ranunculoides should be delegated to a position where it may grow at will without fear of molesting other subjects, there to form a carpet of deeply-toothed leaves, rich green and verdant, and enlightened by solitary blooms, each consisting of five or six elliptical, rich golden-yellow segments. In association with A. ranunculoides, either on the rock garden or in the wild garden, small-flowered bulbous subjects may be planted, its charming effect thereby being increased considerably.

This Anemone is common in sub-alpine regions of Europe and, unlike many of its congeners, it flourishes in chalky soils. *M. W.*

HARDY FLOWER BORDER.

CAMPANULA LATIFOLIA.

Among our native Bellflowers none is so striking as the majestic Campanula latifolia, which, in good soil, will attain a height of at least four feet, and when well-grown is an extremely handsome plant. For C. latifolia is compact and erect in habit and is extremely effective when grown in clumps of three or four plants in the herbaceous border, provided the tall growths, clothed with large, coarsely-toothed leaves, are secured firmly to stakes, for they are rather brittle and liable to be broken off at the base during windy weather. Or C. latifolia may be used for naturalising in the wild garden, a purpose for which it is well adapted as, if anything, it has a preference for partial shade. The flowers of C. latifolia are large, handsome bells, borne in simple, spicate racemes during June and July and rich purplish-blue in colour. This species is one of the easiest to propagate, for it may be divided with ease, and also comes freely from seeds; in fact, when once established in the wild garden it will seed itself about and so reproduce itself freely. For border culture it repays generous treatment, flourishing in rich and deeply-worked soil.

There are several varieties of this noble Campanula, notably var. macrantha, which is even more attractive than the type, although not quite so tall, for its rich, purplish-blue flowers are longer, and in habit it is more compact, its stems and leaves also being slightly downy. The white-flowered form, var. alba, is also an extremely desirable border plant, while var. eriocarpa is less vigorous in growth than the type, and of compact and neat habit, its satiny bells being rich violet-purple. Var. pallida is listed by some nurserymen, its flowers being of a lavender-blue shade. *Kent.*

FLOWER GARDEN.

BIDENS DAHLIOIDES.

For several seasons this charming Composite lived without disturbance in a very dry, sunny border, but it disappeared last winter, probably owing to the frost. Since B. dahlioides comes from Mexico one might expect it to be somewhat tender, mountain plant although it is, and some who are wise take up the tuberous roots and store them like those of Dahlias.

It makes a tuft of deeply-cut leaves, above which the flowering stems rise to the height of a couple of feet. Each of these terminates in summer in a flower, about two inches across, which might be mistaken for the bloom of a Cosmos. In the specimen I had, the broad rays of its blossoms were a pale blush-pink, but I understand that the colour varies to some extent. A meagre soil and a warm situation is what this plant seems to need. Mine, at any rate, did very well with such treatment until too great a faith in the tenderness of the climate lost it for me. *North Wales.*

INDOOR PLANTS.

CYCLAMENS.

IF Cyclamen seeds were sown in September or October last, the young plants should now be in two-and-a-half inch pots, and should be on the shelves near the roof-glass, in a light house, and with a temperature of 45° to 50°. If the shelves have strips of quarter-inch deal wood, two inches deep, screwed on the sides, this will allow for a layer of Cocoa-nut fibre or peat moss, passed through a quarter-inch sieve, on which the small pots may be placed; this will prevent the compost drying out too quickly. There are several methods of growing Cyclamens, and certainly, within the last few years, the culture of Cyclamens has greatly improved, although miserable specimens in five-inch pots are still met with. I remember seeing, at a large show in the midlands, Cyclamen plants which gained first prize, each with about eighteen flowers on stems eighteen inches high, and supported with stakes!

The results I have obtained from the cultural methods I have used for several years have certainly been most satisfactory; for instance, last year, at Moreton Paddox, from seeds sown in September, 1927 (Fig. 96), I had plants that measured five feet in circumference, they were in six-inch pots, each carrying from seventy to one-hundred-and-twenty good, substantial flowers. From the beginning it is very essential that the plants be kept growing in a healthy condition. The compost I use consists of one part good, friable loam, two parts peat-moss put through a quarter-inch sieve, and one part half-decayed Oak or Beech leaves, with a good proportion of charcoal, broken bricks and lime-rubble, and a six-inch potful of Clay's fertiliser to each barrow-load of compost added. I may state that I have always found it a good plan to saturate the peat-moss with liquid manure from the cow-sheds before mixing it with the other ingredients. This compost will be suitable from the time the plants are potted into three-and-a-half-inch pots to the final shifts into five or six-inch or even seven-inch pots. When potting, use clean, well-drained receptacles, taking care to cover the corm lightly; very little ramming is required, in fact, I have always found it best to pack the compost in with the fingers, pressing it very lightly. The final potting should be done in June. I always have a hot-bed prepared in a frame and plunge the pots up to the rims in a falling temperature of 50°. Great care should be taken in watering, syringing and shading. The plants are subject to attacks of green fly, also a yellow thrip which gets into the hearts of the plants; a good method of control is to fumigate the plants once a fortnight with XL All. About the middle of August, the lights of the frames may be left off at night when there is no sign of rain, as Cyclamens relish the heavy dews. Early in September the pots should be lifted nearly, or quite out of the spent hot-bed, also, at this stage, the corms should be cleared of soil to prevent damping. The compost I have advised is a very cheap one, while, if plants have to be sent some distance by road or rail, the weight of this compost compares favourably with the loamy mixture still employed by many growers. *James Page.*

CLUSIA GRANDIFLORA.

THE article on this very beautiful and interesting flowering plant by Mr. L. G. Atkins in your issue of March 2 (p. 158), gave me considerable pleasure. I remember the large specimen he refers to flowering in the stove house at Cambridge Botanic Garden in 1910, and again during June and July, 1911. The charming formation and delicate colouring of the bloom—of such substance it appears as though modelled in wax—appealed to me so much that I endeavoured to portray it in water colours. The effort, although very amateurish in execution, was carried to a determined, if not triumphant, finish, and hangs in my room in this town of mixed memories.

The delicate pink colouring at the base of the otherwise pure white petals, the tight, globular buds partly hidden behind the first expanded flower on each spray, and the massive leaves, dark green above, lighter below—somewhat reminiscent of Ficus elastica in form—with the conspicuous swelling at the base of the petioles, combine to make Clusia grandiflora a remarkably attractive plant for any collection of stove plants where space is not too confined. It may be of some interest to note that during the year 1911 one hundred-and-twelve Natural Orders were represented by plants which flowered in the range of glasshouses at Cambridge Botanic Garden, including the plant under review. *Alfred B. Melles, Ypres, Belgium.*

MEDINILLA MAGNIFICA.

THIS plant is a real aristocrat. Its dignified habit, and the fine colouring of its inflorescence, raises it above the average denizens of our glasshouses, so that one is forced to pay homage to its tropical beauty, even when it is not adorned with blossoms, for its large, leathery, prominently veined leaves are singularly attractive at all times of the year.

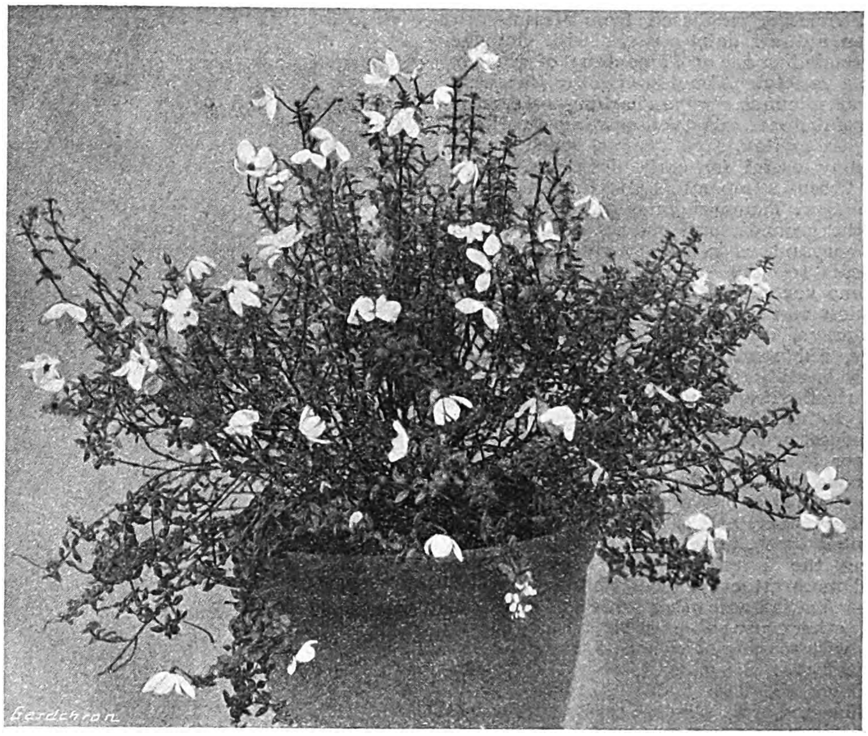


FIG. 97.—TETRATHECA THYMIFOLIA.
(see p. 202).

The inflorescence of this handsome plant is a pendulous, pyramidal panicle, composed of numerous coral-red flowers, against which the deep violet-tinted anthers show up very conspicuously. In addition, the axis and branches of the inflorescence, as well as the bracts, are tinged with pink, so that the whole flower spike exhibits a strikingly beautiful appearance. Unfortunately, this plant is not easy to obtain, although it is cultivated in most botanic gardens.

The usual method of propagating it is by cuttings. These should be selected in March or April, and, after being properly trimmed inserted in small pots of sandy peat, and plunged in a bottom-heated propagator where, in about six weeks, they will have formed an adequate root system and will be ready for potting into four-inch pots. A compost of equal parts of loam and peat, made porous with sufficient silver sand, should be used for potting the plants in all stages of their growth, and it is essential that it should be pressed firmly around the roots, to encourage sturdy growth.

During the summer months the atmosphere must be kept constantly moist by syringing the foliage and damping the floor and stages, and plenty of light should be admitted, so that shading need only be used to protect the plants from the fiercest rays of the sun. To induce the formation of a bushy habit, stopping must be practised in the early stages of growth, but when the desired bushiness is obtained, this practice should be discontinued.

For the final potting it is advisable to mix some well-decayed manure with the compost, and, as it is usual to retain the plants in the same pots (once they have attained the flowering stage) for a number of years, a few lumps of charcoal added will help to maintain its sweetness for a long period.

When the flowers begin to appear in the summer, bi-weekly applications of dilute liquid manure will materially assist in their development, but after the flowers have faded, this practice should be discontinued, or the shoots will become too sappy.

From September until February, it is essential that the plants should be rested in a cooler and drier atmosphere, at the end of which period they should be lightly pruned of straggly shoots, and encouraged into growth by providing them with more warmth and moisture. *G. F. Gardiner, Bristol Botanic Gardens.*

NOTES FROM GLASNEVIN.

FEBRUARY proved a fairly severe month for this locality and was particularly noticeable for violent, cold winds. These were followed by a succession of frosty days when the thermometer registered from 7° to 15° of frost, culminating in a heavy fall of snow. The more tender flowers outside were destroyed. Rhododendron moupinense, which was particularly well-flowered this year, was ruined, although covered every night, and the later flowers on R. dauricum and R. mucronulatum shared a like fate. This check to vegetation may, however, prove a blessing, as other precocious subjects have been retarded. R. Fargesii, well-furnished with buds, was on the point of opening, but became stationary during the severe spell. Within the past few days conditions have become milder, and the red colour of the petals is now showing, still, alas, too early to be safe. One marvels at the hardiness of the old R. Nobleanum, which simply hangs fire while the frost continues and then goes on again.

Recent writers have all commented on the beauty and value of the hardy Heaths, and it is certain that we have no more valuable subjects for display at this season than Erica darleyensis and the many beautiful forms of E. carnea.

Whether planted in generous breadths in a Heath garden, or in clumps about the rock garden, they are invaluable and, fortunately for Glasnevin, they do not object to a little lime, although as a matter of fact we avoid it so far as possible when planting.

Snowdrops, of which we possess a very good collection of species and varieties, all flowered freely in the rock garden, and with one or two exceptions, such as Galanthus Ikariae, are now going over; but in the grass on a north sloping bank the double form is just approaching its best, and has proved more amenable to naturalising than the type, Galanthus nivalis. A colony of Cyclamen coum under a Pine tree is now attracting attention, and we have recently made a considerable planting of C. ibericum acquired from a famous northern Irish garden, where the collections are now being dispersed. Sisyrinchium grandiflorum is now in flower and many other bulbous plants are making rapid progress. Tulipa Kaufmanniana will be in flower, weather permitting, before many days are past, and will be followed by a series lasting into May. One Tulip is already in flower, viz., T. violacea, purchased from Messrs. van Tubergen, a dwarf, dainty species with globular flowers reminding one of T. montana, of which it may be a variety. Also flowering are Narcissus minor var. minimus, always a harbinger of spring, and a useful, dwarf, early, yellow trumpet variety, known here as Rev. Fred Tymins, which proves exceedingly useful for early flowering in the open. Crocus Imperati, C. Imperati var. albida and C. Tommasinianus are all in flower about the grounds, and clumps of C. aureus and C. chrysanthus in variety give colour and brightness to the rock garden. Saxifraga Burseriana var. tridentina is fully open, one of the earliest and best of this section, with pure white flowers, wavy margined and held erect on wiry, red stems. In these early days of spring it is still wise to keep a pane of glass over early Saxifrages if the flowers are to be enjoyed to the fullest extent. Although the alpine house, or frame, is useful in this way, it can never take the place of the rock garden or be more than an adjunct to it. Anemones are now coming into flower; already A. blanda is showing colour, and the Hepatica section is represented by A. angulosa

During the severe weather indoor plants received more attention from visitors, particularly the Acacias and other flowering subjects. Among other species may be noted Acacia aspera, with roughly hairy shoots, hairy, linear-lanceolate leaves, and yellow flower heads borne in pairs from the leaf axils; Acacia diffusa, leaves linear, sharply pointed, scattered, flowers sulphur-yellow in round heads; A. leprosa, a graceful species of open habit, leaves up to two inches long, linear-anceolate, sharply pointed, flower heads yellow; A. Howettii, leaves dark green, one inch long, sharply pointed, flower head pale yellow; and A. ovata, leaves ovate, flowers deep yellow. Better known species are A. dealbata and A. verticillata. A. cyanophylla, with glaucous-green leaves, and A. dodonaeifolia have much larger leaves or phyllodes than many of the other species, and are tree-like in dimensions when allowed to develop. Phylica ericoides, a South African shrub of the Rhamnus family, has narrow, pointed leaves, half-an-inch long, and white beneath, the small, white flowers being borne at the ends of the previous year's shoots. Barosma foetidissima, also from South Africa, is a useful, early-flowering greenhouse shrub with tiny leaves, a quarter-of-an-inch long, the flowers produced at the ends of the shoots, being small, white, with long, protruding anthers. Candollea cuneiformis, an Australian shrub of the Dilleniaceae, is attractive with bright yellow flowers fully an inch across, produced singly at the ends of the shoots; leaves oblanceolate, one-and-a-half inch long by an inch wide. Kunzea oppositifolia, an Australian plant of the Myrtle family, forms a twiggy shrub with minute, scale-like leaves and corymbose heads of pink flowers rendered conspicuous by the numerous stamens characteristic of the family.

Tetratheca thymifolia (Fig. 97) is an uncommon and beautiful dwarf shrub with small, sharply-pointed leaves, the four-petalled flowers fully half-an-inch in diameter, mauve-pink in colour. Eupatorium vernale, acquired from Messrs. Lemoine, of Nancy, bears corymbs of white flower heads and gave promise of being a useful early-flowering greenhouse plant; the cordate-ovate leaves are softly hairy on both surfaces, the stems similarly clothed with hairs. The large genus Cassia exhibits considerable variation in the habit and characters of its species. C. artemisioides is probably little known outside botanic gardens, and would not appeal to any but the collector and lover of plants; the leaflets are linear, greyish-green, differing greatly from those of the commonly-grown C. corymbosa; flowers are produced in the upper leaf axils, and are rich yellow, with dark brown anthers.

An equally polymorphic genus is Euphorbia, usually represented by the Poinsettia, E. pulcherrima, and E. fulgens (jacquiniaeflora). The latter, although attractive as a pot plant when well-grown, only shows what it is capable of when planted out in a warm house or corridor; there it will make long, arching shoots six to eight feet high, well furnished with bright orange flowers from fifteen to eighteen inches from the apex. A more uncommon species is E. punicea, of stouter and stiffer habit, with glaucous-green leaves and flowers distinguished by larger, bright red bracts; this too develops into much finer specimens when planted out. *J. W. Besant.*

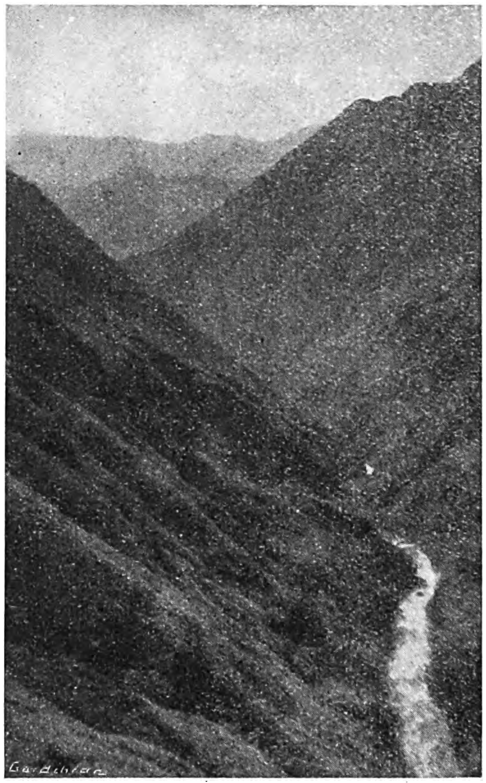


FIG. 98.—THE STEEP-SIDED VALLEY OF THE DELEI.

MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XVI.—TEMPERATE RAIN FOREST.

THE name "temperate rain forest" may be conveniently given to that belt of forest which lies, roughly, between 5,000 and 7,000 feet throughout the higher ranges of Indo-Himalaya. It is well developed on the southern face of the mountains from Sikkim, in the west, to Yunnan in the east, south of the line of great peaks. It is not an exact term, nor can it be defined in a few words; nevertheless, no botanist will have any difficulty in recognising it when he meets it. Below, it passes into Indo-Malayan sub-tropical forest; above, it passes into Rhododendron-Conifer forest, of which more presently.

The temperate rain forest is usually fairly open, and offers little opposition, other than that of the terrain, to progress in any direction. Even where the undergrowth is chiefly Bamboo, it is scattered, although sometimes thickets of Arundinaria or Phyllostachys are troublesome. The proportion of deciduous trees is fairly high, although the forest gives the impression of being evergreen. Conifers are few and do not grow socially; the same may be stated of Rhododendrons, although these are generally more numerous and varied than Conifers. The temperate rain forest, in fact, may be said to begin at the level at which the first small, tree-Rhododendrons are met with. Climbing plants are few enough to pass almost unnoticed, but epiphytes are legion, and contain a large proportion of Ericaceae. The undergrowth comprises Ferns, Bamboos and Monocotyledons, besides a few shrubs; it develops chiefly during the rainy season (summer). Leaves with drip tips are not uncommon, but that hall-mark of the jungle, the plank buttress-root, hardly survives the passage to a rarer atmosphere. Apparently it is not much wanted, as the trees do not attain any great stature; the largest have massive trunks, there being plenty of room for them to expand. Cauliflory is the exception rather than the rule, but is characteristic of certain genera.

As regards climate, temperate rain forest, as the name suggests, is characteristic of a region of constant precipitation, either in the form of rain or dew. There is no prolonged hot-weather drought as in the typical monsoon region of the plains; consequently the trees do not cast their leaves in the spring. There is, however, a cold weather check in winter, when the deciduous trees shed their leaves. A little snow may fall here, especially towards the upper limits of the forest, but it does not lie. The bulk of the rain falls during the summer (May to October), and is persistent rather than heavy; for weeks the forest is bathed in cloud.

Such, in general, are the features of this forest belt, and if I now mention some of the typical trees, before passing on to a more detailed account of the Delei valley (Fig. 98) in particular, no botanist acquainted with India will have any difficulty in recognising the association to which the above name is applied.

Conifers include Pinus excelsa and species of Podocarpus. Pinus excelsa occurs at much higher elevations in the western Himalayas, but in far northern Burma it is found scattered so low as 6,000 to 7,000 feet, and hardly ascends any higher. Common evergreen trees are Bucklandia populnea, Quercus semiserrata and other species, Castanopsis indica and C. tribuloides, and species of Prunus, Illicium, Michelia, Engelhardtia, Ilex and Rhododendron. Among the last-named are R. arboreum, R. Mackenzianum and R. Nuttallii, which is a big shrub rather than a tree. As one ascends the Rhododendrons rapidly increase in number, in variety and in size, until presently they dominate the forest. Among deciduous trees are the big-leafed Magnolia rostrata and species of Acer, Betula, Corylopsis, Ficus (F. clavata) and Salix. The epiphytic flora includes Orchids, Ericaceae (Rhododendron dendricola, R. vaccinioides and allied species); Pentapterygium, Agapetes, Aeschynanthus species, Begonia species, and small Zingiberaceae.

As already noted, the undergrowth is composed largely of Monocotyledons—Liliaceae, such as Lilium giganteum, Disporum, Paris; Orchidaceae, chiefly species of Phaius; Arisaema; Viola; Oxalis; and small shrubs like Daphne papyracea (cannabina), Mahonia species, Rubus, Ribes, and so forth. Climbing plants are not very noticeable, but include species of Clematis, Lonicera (L. torniflora, etc.), Aristolochia, Sabia and Schizandra.

The temperate rain forest of the Delei valley

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; and March 2, 1929.

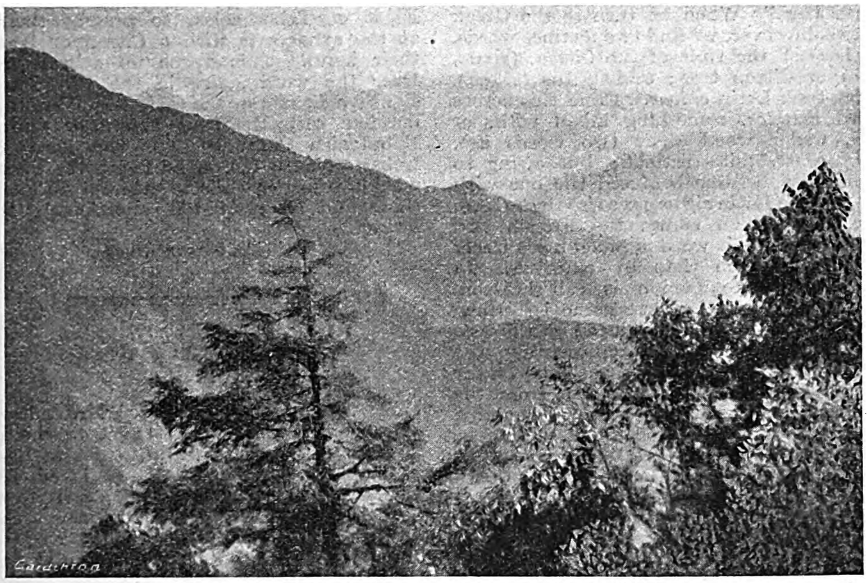

FIG. 99.—THE MISHMI HILLS; TSUGA AND OAK FOREST IN THE FOREGROUND.

was well up to specification. Apparently there are no Pine trees in the Delei, but there was a very handsome Podocarpus, not uncommon between 5,000 and 6,000 feet. The leaves, which are narrow, linear, rather stiff and pointed, reach a length of six inches, and are characterised by two silver stripes on the under surface, one on either side of the prominent midrib, running the whole length of the leaf. Unfortunately, all the trees I saw were males, the pollen being loosed in April. This species is clearly allied to P. neriifolia, which, however, is not found above 3,000 feet in Sikkim.

Corylopsis himalayana was unpleating its fan-shaped leaves in April—it had already shaken out its long catkins, and the delicious fresh green of the leaves reminded me of spring in England. A large Oak was common in this part of the forest; it had huge, serrated leaves of a beautiful grey-blue beneath, and appeared to be leafless, or nearly so, for a short time before the leaf buds broke in May.

Among Rhododendrons, besides those referred to in the last chapter, R. Nuttallii, although local, was common on one ridge, and was just in flower on April 18. Possibly, according to the minute analytical methods current to-day, whereby species are indefinitely multiplied, this would not pass as R. Nuttallii; but that is what I should call it.

One of the most characteristic deciduous trees of the temperate rain forest is Magnolia rostrata, a fine tree with very large, handsome leaves (Fig. 100), but a bitter disappointment in flower. It was not exactly common in the Delei valley, but one could hardly climb to 7,000 feet without coming across at least one specimen, probably half-a-dozen. The tree is easily recognised by its size, being sometimes a hundred feet high, and by its pale, ash-white bark; also by the size of the great leaves lying beneath it, and by its cones, some of which are pretty certain to be picked up under it—which is more than can be said for most species of Magnolia in these forests—I am referring, of course, to the previous year's cones, not to those of the current year. The leaf-buds were still tightly closed on April 15; three weeks later the tree was in full foliage, and in the last week of May it flowered, without adding much to its reputation.

The Delei forests were unusually rich in species of Calanthe or Phaius, of which I recognised five. Three of these flowered in April, the other two in August. The first of the spring-flowering species had flowers of amethyst-purple, deliciously fragrant; another had the fine outer lobes apple-green, and the lip canary-yellow, and this also was fragrant. These were the two common species, and although they really grew together, it was difficult to say where one or the other would be found. On the whole, perhaps, the yellow one climbed to greater heights, and was the commoner, certainly in some districts. Both were handsome Orchids, particularly 'Amethystina.' The third species, of which I found only one clump, had chocolate-red perianth lobes, and the flowers were not fragrant. It was by no means so striking an object as the other two. Although all these species of Phaius may carry a dozen or more blooms on a spike, it is rare for them to ripen more than two or three seed capsules. Another rather arresting plant was a species of Disporum, with cream, or sometimes purple, flowers, which opened early in April. This grew about four feet high before it stopped; the fruits are black.

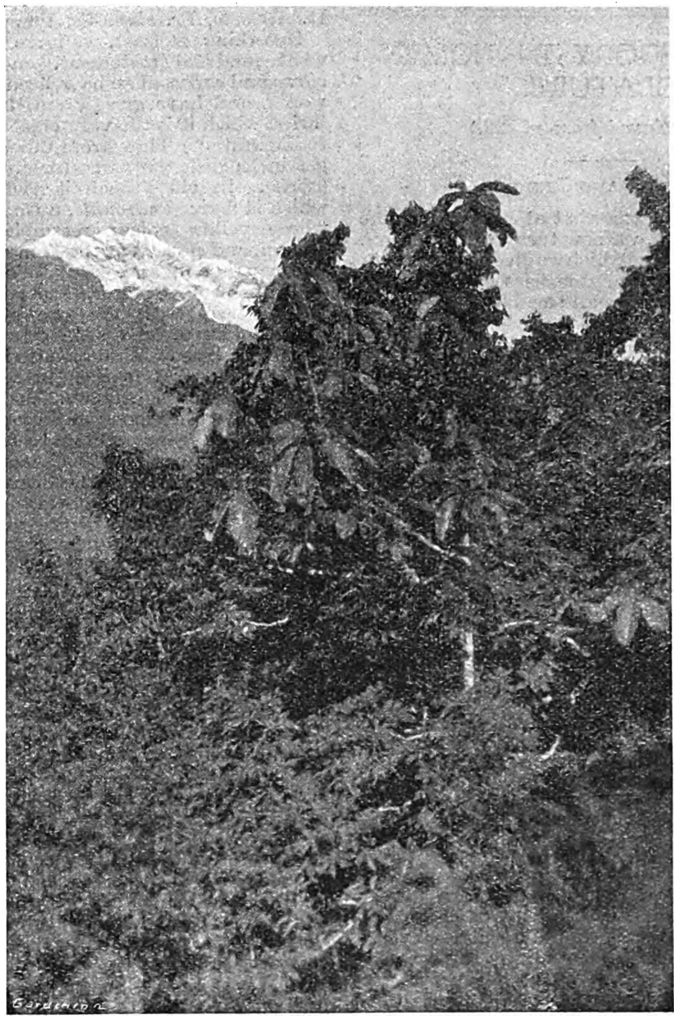

FIG. 100.—THE BIG LEAVES OF MAGNOLIA ROSTRATA.

Of the undershrubs found here, a small, bushy evergreen with prickly stems is worthy of special notice. I hardly know what to call it; at first sight I put it down as an Osmanthus, until I found that it had four stamens. Daphne, my second choice, also seemed to be ruled out. However, if I call it 'Daphmanthus' anyone will be able to form a good idea of its appearance. It flowered in April; the flowers are quite small, and snow-white, but there are plenty of them, and their delicious fragrance recalls that of Daphne. What, however, makes the plant so attractive is the fact that the bright scarlet berries of the previous winter remain on throughout the flowering period; birds apparently let them alone, and not only were the bushes studded with these coral beads in April, but quite a number remained on until August, defying the rain. The flowers were then, of course, long since over, and the new berries, although still green, were ripening slowly; meanwhile, those of the previous year's berries which remained were swollen to twice their normal size, which rendered them highly conspicuous. But it was in April, when the tiny white flowers twinkled like frost among the neat green leaves, lit by rows of scarlet fairy lamps, that the 'Daphmanthus' looked supremely demure. It is a woodland plant, and its hardiness cannot be taken entirely for granted. *F. Kingdon Ward.*

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PLANT HISTORY IN NOMENCLATURE.

(*Continued from p.* 122.)

ORANGES AND LEMONS.

HAVING dealt somewhat at length with the word Orange, we now turn to the Lemon. This is the name which we give to the fruit of one of the many different species of Citrus (C. Medica Limonum)—a small tree bearing smooth, Laurel-like leaves. The fruit is not globose or Orange-shaped, but ovate, oval or oblong, terminating at the apex in a small blunt knob, and usually of a lighter yellow colour than the Orange, abounding when well-grown in an acid juice from which lemonade is made. And in this word we see the influence of plants on language. Lemonade is a beverage made from the fruit of the Lemon. But whence comes the name of the fruit itself? Again we have to go to Persia—the land which has given us so many things of value, and such a number of interesting words. We get the word through the French *limon,* which not only gave birth in France to *limonade,* but also to *limonadier,* a coffee-house keeper. Corresponding with the English and French are the Spanish, Portuguese and Italian, which are all traceable to the Arabic *laimun,* or Persian *limun, limuna.* When we remember that the initial letter is liable to change, we shall easily see the same word in the Bengalese *nimbu,* the *nimbuka* of other languages and dialects of India, and so shall understand the Cantonese *ning-mung* (Lemon) and *ning-mung shui,* lemonade, or, literally, Lemon-water.

It is impossible to deal with the subject satisfactorily, however, unless we turn to the scientific term Citrus, with its many and important derivatives. Oranges and Lemons are the fruits of trees which are known botanically under the generic name Citrus. When we have arrived at this fact we suddenly find ourselves in a maze, confronted with all sorts of problems, and liable at any moment, if we do not watch our steps, to trip and stumble and fall. The etymological tangle is at first bewildering from the fact that confusion arose long ago between Citrus and Cedrus. Let us see if, with a little patience, we can bring order out of chaos.

We begin with Citrus, which looks like pure Latin. The dictionaries say that the word is found in Lucretius and elsewhere, and is probably akin to the Greek *κεδσος, cedrus.* From it they derive citreus, " of, or pertaining to the Citrus tree." When we turn to the Greek authorities, however, we find two distinct words, Citron (*κιτσον*) the fruit of the Citrea, (*κιτσια,* or *κιτσεα*), or Citron tree; and Cedrus (*κεδσος*), the Cedar tree, Latin *cedrus.* From this comes the word *cedrotos,* something inlaid with, or made of, Cedar wood. The two words are, then, apparently quite distinct; but owing to their similarity became confused the one with the other. The Latin *citrus* gave rise to the form *citronem,* from which comes the French and English Citron. This word is much more freely used by the French than by ourselves. In modern French the Lemon is called Citron, while what we know by that name is termed *cédrat,* a word which was introduced into France in the sixteenth century, representing the Italian *cedrato.* Note the difference between the two words citron and cedrate, one from the Greek *citron,* the other from *cedrus.* By mixing up the two, endless confusion arose, so that so great an authority as Diez (*Dictionary of the Romance Languages,* s.v. Cedro) was confused thereby. Perhaps I cannot better illustrate what a tangle the words had got into than by giving the definition just as it stands there.

" CEDRO It., Sp. Pg. *cidra,* Pg. also *cidrao,* Fr. Eng. *citron* (fruit); It. *cedro,* Sp. *cidro,* Fr. *citronnier* (tree); from *citrus, citreum.* It. has *cederno* on analogy of *quernus.* The usu. word is the foreign *limone,* q. v. The variable quantity of the L. accounts for the double form in *e* and *i*; hence It. *cedronella,* Sp. *cidronela,* Fr. *citronelle,* balm, L. *citrago*; also It. *citriuolo,* Fr. *citrouille,* Pumpkin."

One thing, at least, we learn from this somewhat muddled statement, and that is that *citrus* and *cedrus* alike have been prolific mother-words, and have greatly enriched our vocabularies, which it is the very object of these papers to illustrate.* Thus, from Citrus or Citron we get in English the name for an invaluable acid (*citric*). In old French it yielded *citre,* from which is derived *citrouille,* a Gourd or Pumpkin, whose yellow colour resembles that of the Lemon, and *citronnier,* the Lemon tree. To these we may add *citrate, citrin, citronnat, citronne,* and others. *Citrino* or *citrina* is defined as an Italian term with the two-fold meaning (1) citron-coloured, and (2) sorte de Mirobolan, the Mirobalano or Mirabolan (as it is indifferently spelt in old dictionaries) being *une espece de prunier.* Thus lightly we skip from Citron to Lemon, from Lemon to Pumpkin, and from Pumpkin to Prune or Plum! How wonderful a plaything is speech and language.

Before we pass from the Citron, let us remark that the fruit has its interesting lore and associations. In the east it may often be found on the altar, and the Chinese give the name Fat-shau or Buddha's hand to a variety which grows into a very monstrous shape. The usual name for the Citron is Heung-ün, or Fragrant Un, probably with reference to its odour and shape.

The derivatives from *cedrus,* which, nevertheless, relate to the Citrus, are many. Diez has already supplied us with a goodly number, such as *cedro* and *cedronella,* but the most important are French. *Cédrat* has already been mentioned. Few things interested me more in Corsica than the Citrus. The Commune of Luri, Cap Corse, is described as " *un immense jardin, ou sont cultives les citronniers et les cédratiers. . . . Le Cap Corse produit par an plus d'un million de kilog de cédrats . . . On fait avec ce fruit, connu vulgairement en Franc sous le nom de poncire de pomme du Paradis ou Pomme d'Adam, des confitures très recherchées; on le confit aussi au sucre par tranches ou en entier.*"

One ought not to leave entirely out of the subject the effect of these fruits on other languages. Germany, in common with the Latin races, has introduced the foregoing terms, and the German dictionary is rich in such words as *limone, citrone, citronenfarben, limonade,* and the like. To go fully into the question in its relation to the Hebrew and other Semitic tongues would require an article by itself. One allusion may, however, be permitted in conclusion. It is a custom among the modern Jews on the day when they celebrate the Feast of Tabernacles, to present themselves at the synagogue with a Citron or Lemon in their hand. This opens up a wide subject. Does the word *hadar* in the Old Testament signify a Lemon or the Citron? Were the Jews familiar with the fruit before or during the Babylonish Captivity? Is the *ethrog* of the Luban coins a Citron or Lemon? Perhaps it would be worth while to attempt an answer to these and other related questions! *Hilderic Friend.*

(*To be continued*).

LA SELVA, NICE.

AT the kind invitation of Mr. Edward H. Woodall, I paid my first visit to the French Riviera to see his beautiful garden at La Selva, Nice. I was told that the time I had chosen—the end of November— was too early to see the garden at its best, but what I saw was quite enough to astonish me. To be removed in a few hours from wintry conditions to a land of brilliant sunshine and tropical vegetation, where plants that we fuss about with in stoves and greenhouses in England, were growing and flowering remarkably in the open, was an amazing experience.

La Selva is situated on high ground, about two miles from Nice, and a beautiful view of the town, with the sea in the distance, is obtained from the terrace. This view was well illustrated in *The Gardeners' Chronicle* for February 4, 1928 (Supplement Plate).

The commodious villa is, for the most part, clothed with beautiful climbing plants, Bougainvilleas being a mass of bloom at the time of my visit. The brightly-coloured trumpets of Bignonia venusta, orange, and B. Cherere (buccinatoria), red, could be seen high up near the roof. Lantanas in several colours, Kennedyas, and the pretty, Heather-like, climbing Lopezia, with dainty, pink flowers borne in the axils of the leaves, were all flowering profusely.

In the large porch at the front door and on the varandah, were groups of flowering plants in pots. Among these I noticed some well-flowered specimens of Cypripedium insigne, and several fine varieties of it. Nerine Mansellii was also flowering freely. All these are grown entirely outside, in the shade of the large Olive trees behind the house, and placed where I saw them when they come into flower.

Opposite the front of the house the ground rises considerably, and has been converted into a rock garden, in which are grown succulents and other subjects that will withstand the dry position and the hot climate (Fig. 101); but alpine gardening as we know it at home is not attempted. Rough stone steps lead to the level ground above where Roses were growing well. The stony, dry-looking soil is not the kind one associates with Roses, but the following varieties were fine:—Hadley, Lady Plymouth, Peace, H. Stevens, La France de '99 and Comtesse de Leusse, and there were great standard specimens of several of these varieties, smothered in bloom. Rambler Roses grew splendidly, many of the varieties in flower being strange to me. An arch of Irene Bennet was particularly striking, the large pink flowers showing up beautifully against the background of blue sky. A little further on were numerous beds of Carnations, of the varieties so popular on the Riviera, in wonderful colours, but the calyces split badly. These are grown to supply cut flowers for the house, and Mr. Woodall informed me that this French strain of Tree-Carnations is much hardier than the more symmetrical type grown in England. Even after weeks of short days and cold nights, bunches of brilliant blooms could be gathered if protected only by mats spread at night over the light wooden frame-work which surrounded every bed.

The greenhouses and the frameyard were

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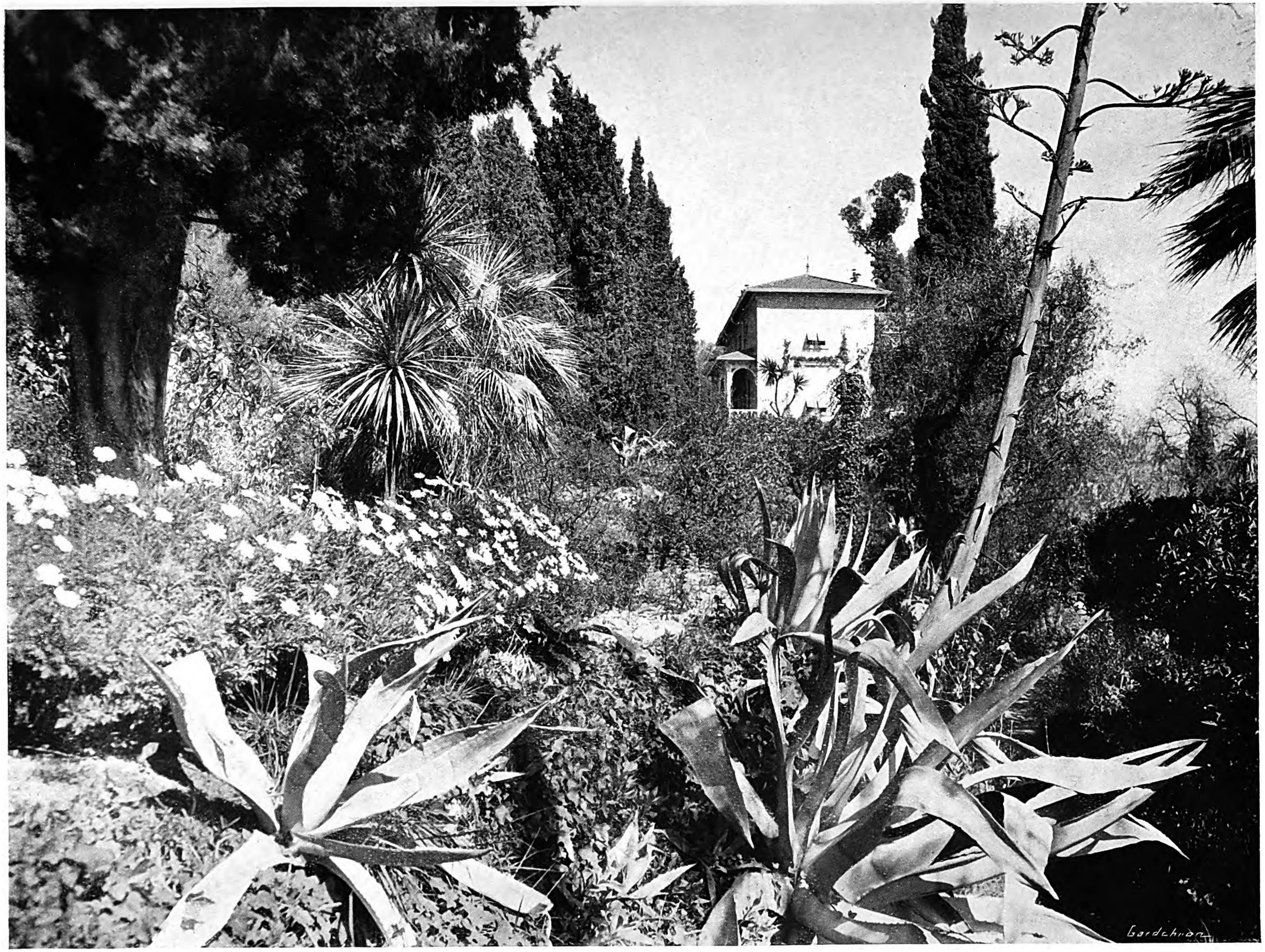
* The relationship between Citron and Cedar will be dealt with in my next article.



AGAVES AND BRAHEA ROEZLI AT LA SELVA, NICE.

inspected, and the latter disclosed large batches of Primulas, Cinerarias, Schizanthuses, etc., growing in five-inch pots preparatory to being planted in the beds and borders of the flower garden. These were all growing in the open, with a light frame-work similar to that used for the Carnations, so that protection could be afforded on cold nights. Primula sinensis, P. obconica and P. malacoides are planted out to make a show about Christmas time, followed by Schizanthuses, and the Cinerarias later in March.

Near-by, towering above some shrubs, was the stately Dahlia imperialis, with its pyramidal head of white, Lily-like flowers. It is so striking that one regrets it does not show its beauty under glass at home. I was told that for one whole month this plant is the glory of the garden. Paths winding down the side of the hill lead to a charming valley which, from what I saw and was told, must in the early spring be the great feature of La Selva. Mr. Woodall is fortunate in having this well-wooded, shady valley, and he has made full use of it, growing therein many beautiful subjects that could not be grown so successfully elsewhere. This valley has, very wisely, been kept in a semi-wild state and is, in parts, reminiscent of typical English woodland, but a visitor may be startled to find in such a scene young, self-sown Palms and Agaves springing up through a carpet of Ivy. The common Ivy is a great nuisance in the valley, and much time is spent in keeping it from smothering better things. Ivy seedlings spring up in thousands, and Acanthus mollis is a troublesome weed. Great drifts of Anemones, Orchids (see Fig. 95, p. 197), Narcissi, and species of Cyclamen—that naturalise themselves freely—notably C. libanoticum, and a host of other subjects planted here, must make this valley a very beautiful place in springtime.

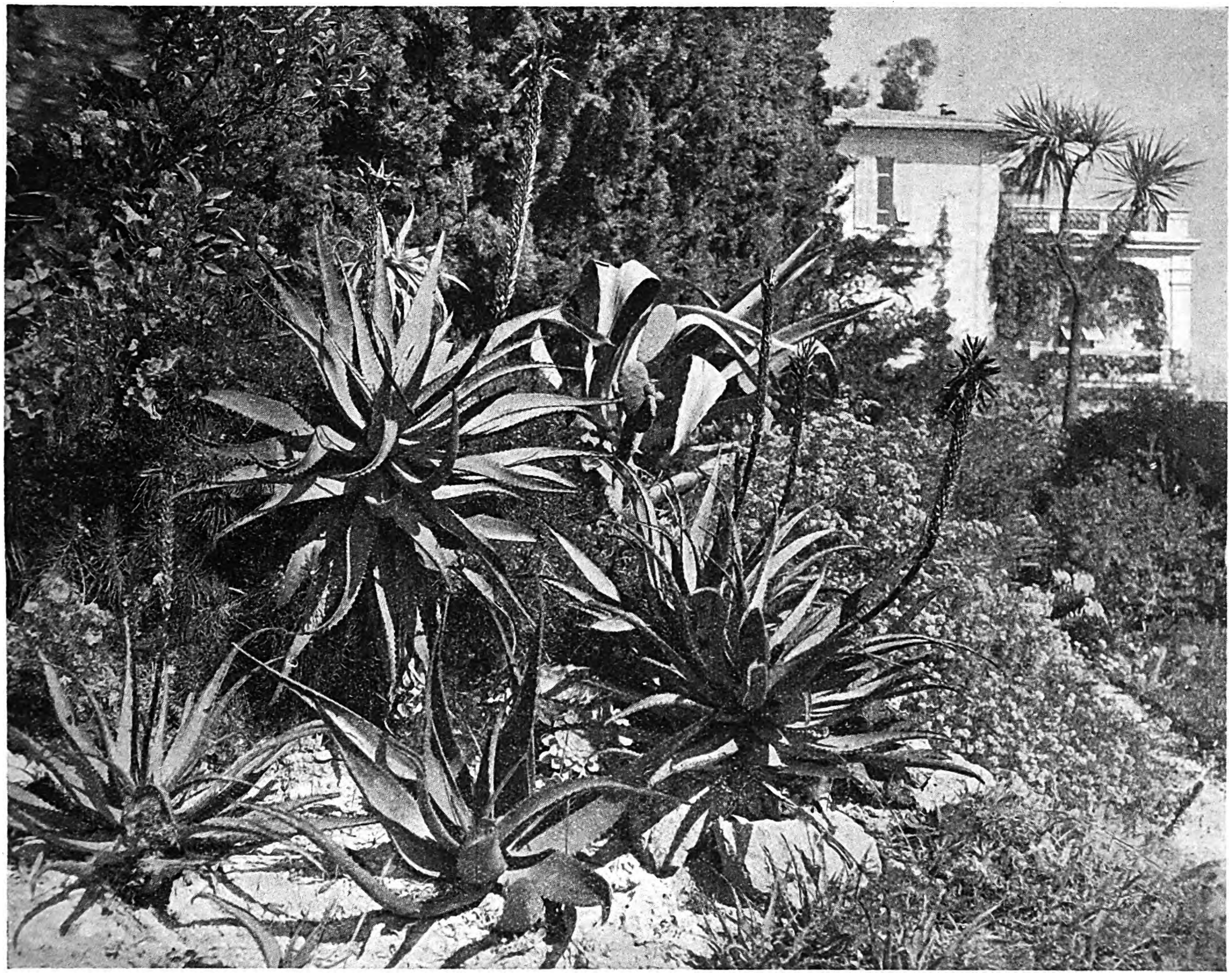


FIG. 101.—LA SELVA: SUCCULENT PLANTS IN THE ROCK GARDEN.

Gardening there is unlike the usual Riviera style, and I could well believe it is particularly interesting to southern gardeners. I was told that a glade planted with Lithospermums, blue Periwinkles and Anemones provides a carpet of blue that attracts many visitors. I noticed in the wide stretch of grass in the bottom of the valley, a perfect specimen of the Italian Cypress, straight and close as though it had been clipped; it must, I think, be quite one hundred feet tall. I understood Mr. Woodall planted this tree himself, and this set me thinking how quickly a garden matures in this favoured land; how splendid to be a tree planter where an average life is not too short to get such results.

On the far side of the valley a beautiful view is obtained of the slope at the top of which the house stands. Tall Olive and Eucalyptus trees grow behind the house, and great Palms and Cypresses stand out in the flower garden, all assisting to make a perfect picture, and one realises, from this view-point, with what foresight and how well and ably the planting has been done, and how the garden has rewarded the owner for the long life of loving care he has devoted to it. Returning by another path to the well-kept flower garden, I noticed a splendidly-grown plant of Agave Franzosini, with leaves almost white. Another glaucous-leaved subject that much impressed me was an immense plant of the Blue Palm—Brahea Roezlii (see Supplement Plate). Flowering Aloes were throwing up their flower spikes and giving promise of a fine display later. In the flower garden proper, I saw several large groups of an orange-coloured Cosmos called Klondyke. I helped myself liberally to seeds of this, hoping that it would not be too late for northern gardens. Very striking also were masses of a fine pink variety of Phlox Drummondii flowering very freely. Suspended by wires, under a rustic arch, were several big tufts of the curious Tillandsia usneoides—Mr. Woodall very aptly calls it the "Air Plant"—and certainly it had nothing else to grow in, having not a vestige of Sphagnum-moss, or any other rooting material, The dead flower spikes indicated that it had flowered extremely well.

Many other beautiful things, including large clumps of Tree Paeonies (Fig. 102), were noticed in this glorious garden, where no thought that it was winter entered my mind, but I am sorry that the latest news from Mr. Woodall was that exceptionally severe weather was being experienced at La Selva, and that the country, at the time of writing (February) was covered with snow which had fallen two nights in succession, while 4° of frost had been registered. He writes: "We are, of course, covering up as well as we can, and so far have just escaped disaster." Such weather, if it continues, must be calamitous to a garden such as the one I have endeavoured to describe, and it is to be greatly hoped that there will be a speedy change to better conditions. *J. Clark, Scarborough.*

ANNUALS UNDER GLASS IN U.S.A.

Apart from what Mr. T. H. Everett (p. 27) wrote as to the importance of annuals under glass for private gardeners in the United States, I venture to suggest that annuals are of even greater importance to the commercial florist. Indeed, it is the florist who has popularised annuals under glass in America. The first taken in hand was the Sweet Pea, the advent of Blanche Ferry prompting one or two growers to try them under glass in winter. By selection, this variety was made still more early, and eventually Anton Zvolanek introduced a strain of winter-flowering grandiflora Sweet Peas which, by degrees, was bred with the Spencers. At first these early varieties were terribly mixed, but, finally, they were rogued until now we have scores of absolutely fixed sorts, possessing all the colours, and the same giant size as the later, summer-flowering kinds. At the New York show in March, several private gardeners exhibit giant exhibition Sweet Pea flowers regularly, their blooms rivalling any grown out-of-doors in England, save that four-flowered spikes are not obtained so readily. Mr. Frank G. Cuthbertson (son of Mr. William Cuthbertson, of Messrs. Dobbie and Co.), of Messrs. C. C. Morse and Co., and Mr. George W. Kerr, of Messrs. W. Atlee Burpee and Co., have done much in the breeding of early-flowering Sweet Peas. Mr. Kerr will be remembered by many, as he was at one time with Messrs. Dobbie and Co., and later with Messrs. Bakers, of Wolverhampton.

Antirrhinums were taken in hand next, Sutton's Pink or Cottage Maid being grown with success before 1910. The seeds used to be imported, but by degrees growers commenced saving their own seeds under glass, and varieties possessing a winter-flowering character were evolved. To-day there are many sorts specially offered for growing under glass, while not a few growers select their own, so that it is common for the first crop to come into the market in November, from which time onwards blooms are available right through the winter and up to June. Growers around New York are particularly clever at producing early Snapdragons; the New York market invariably has forced flowers before any other. Long-stemmed spikes make up to 10s. and 12s. per dozen. Snapdragons are grown under glass on a tremendous scale, and they are much more profitable than Carnations; many former Carnation specialists now grow Antirrhinums instead.

Mignonette became popular in America as an indoor plant about the same time as the Antirrhinum, and by disbudding, immense spikes over a foot in length are produced, although the smaller, naturally-grown stocks are most profitable. To-day, Goliath and Defiance are among the popular florists' sorts.

The Calendula has come to the front during recent times, the beginning of its popularity being due, I think, to the arrival of Messrs. Dobbie's Orange King on the Californian seed farms. This, without doubt, was the parent of Ball's Calendula, a giant-flowered variety especially suited to glasshouse culture. This is the leading Calendula of to-day in America, and good growers produce blooms four inches across on stems up to two feet high; the pale yellow sorts are not quite so large.

Trachymene (Didiscus) coerulea came into vogue some nine or ten years ago, under the name of Blue Lace Flower. It is largely grown by commercial florists, some devoting whole houses to it. Gypsophila elegans in sown thickly in flats, and is sliced off as soon as it blooms, the first crop coming in about January. Lupinus Hartwegii, Larkspurs, Nemesias, Cornflowers, Centaurea imperialis, Bellis, Chrysanthemum coronarium, Matricaria (sold as Feverfew), Stevia, Pansies, Salpiglossis, Stocks and Statice Suworowi, are other subjects grown on a large scale commercially.

Stevia serrata (Piqueria trinervia) comes into flower about November; and Pansies at Christmas, some blooms of these arriving in New York in January being four inches across, with stems nearly twelve inches long, and they realise 40/- per hundred wholesale. Most of the other subjects mentioned are in season in the early spring, for they all have to be grown under fairly cool conditions and refuse to make any headway during mid-winter.

Asters also are popular subjects for growing under glass and while some growers specialise in the early sorts for flowering in July, others plant the late sorts which, while not flowering much ahead of the outdoor plants, are considerably finer and fetch better prices. The "yellows" and "wilt" diseases are so serious in some districts that it is impossible to grow Asters out-of-doors. "Yellows" is caused by a leaf-hopper which lives on such weeds as Docks and Plantains, and where these exist it is useless to try to grow Asters; under glass, the leaf-hopper may be kept at bay by screening the ventilators.

Another remarkable development is the culture of Delphiniums under glass. Belladonna was the first kind to prove amenable and when seeds became available it soon became a general favourite, and still more so when a dark-coloured form named Bellamosum was introduced. Millions of plants of the Belladonna type are raised from seeds sown in January and planted out-of-doors. The plants flower during the summer, and in the fall the roots are placed in cold frames. About the end of December, or later, they are planted in beds or trenches and grown in a temperature of 50°. Some growers obtain flowers by February, but the main supply appears in April. A few growers plant the giant-flowered hybrids under glass and get them in flower about May, making so much as a dollar a spike wholesale. *T. A. Weston, New Jersey, U.S.A.*

NOTICES OF BOOKS.

Starch in the Service of Plant and Man.

Starch is a material of the greatest importance in the economy of plant life, and the story of how plants manufacture and utilise this substance is very lucidly told in the chapter on "Starch in its Relation to Plant Metabolism" in Messrs. Eynon and Lane's admirable book.[*] Under the influence of sunlight, chlorophyll is capable of effecting an interaction between carbon dioxide and water vapour, both present in the atmosphere, with the liberation of oxygen and the production of formaldehyde, which is then polymerised to a sugar and the latter to starch. Starch formed in this way is sometimes called "transitory starch," since, during the night, when the influence of light is withdrawn, all or part of it is broken down into sugar and transferred to other parts of the plant for purposes of nourishment. While, however, only the chlorophyll-containing plastids, or chloroplasts, appear to be capable of synthesising starch from carbon dioxide and water, the colourless plastids are able to build it up from sugar, and many plants manufacture large quantities of starch in this way for use as a reserve food material.

Chemical science is certainly very much nearer the solution of the difficult problem of the chemical composition of starch than was the case twenty or thirty years ago; but, as knowledge has accumulated concerning this very remarkable substance, it has become evident that the problem is of a much more complex character than was at one time realised. It seems pretty certain that starch contains at least two chemically distinct substances, and probably the small amounts of phosphorous and calcium, always present and formerly regarded as being due to impurities, are essential constituents. Messrs. Eynon and Lane discuss the question very fully.

Many plants form reserves of starch in sufficient amounts to make extraction on a commercial scale economically possible, and man has found the substance as useful as has the plant. Not only is starch employed as a food, but it has many important applications in the paper-making and textile industries and in the manufacture of face powders and other cosmetics. Moreover, the fact that starch may be very readily converted into fermentable sugar is a matter of prime importance, beer, whisky and technical alcohol being all correctly described as starchy products.

Starches derived from different plants are by no means identical. They differ from each other in various ways, especially in the size of their granules. The four main commercial sources are Potatos, Maize, Wheat and Rice. Messrs. Eynon and Lane deal very fully with the technical extraction of starch from these materials, and their book is illustrated with photo-micrographs of these and other varieties of starch. Among other starches dealt with are Cassava starch, the various sorts of Arrowroot, and Sago. The first is obtained from the tuberous roots of Jatropha Manihot (Manihot utilissima) and J. dulcis. It is remarkable that the fresh tubers, especially those of the former species, are poisonous, owing to the presence in them of hydrocyanic acid, which is, however, entirely dissipated by cooking, or by the method adopted for extracting and purifying the starch. Tapioca is made from this starch by partially gelatinising it by the agency of heat.

In the course of their book, Messrs. Eynon and Lane deal with many other aspects of the subject of starch, and the volume should be found a useful work of reference to all those concerned in any way with this most important material. *H. S. R.*

Potatos Immune to Wart Disease.

This volume[*] is the third of a series which deals with the Potato; the two earlier ones treated of the diseases of the tuber and the haulm or green parts, respectively. In this volume, the characters of flower, leaf, tuber and sprout of thirty-two wart immune, and eleven susceptible varieties are displayed on twenty-four coloured plates. Accompanying each plate is a description in English, French and German of each variety, so planned as to emphasise the characteristic features of the variety and thus assist the grower to distinguish it from those most likely to occur as rogues or substitutes in a commercial sample of "seed."

The selection of varieties consists of those most commonly grown in Germany, and with the exception of Duke of York, Royal Kidney and Immune Ashleaf, contains none which are of English origin or grown in the United Kingdom.

One is surprised to find Roode Star described as an immune, for although it was at first so listed at Ormskirk, subsequent trials threw grave doubts on the purity of the stocks sent in and the identity of the variety; the latest investigations of Köhler in Germany have confirmed the diagnosis of susceptibility. The point is not of much practical importance in this country as the variety is not grown here, but abroad it is otherwise. A further point of interest in regard to Roode Star is that a selection of it produced by Heine was claimed to be completely immune in the field; this, too, has been disproved by Köhler, and leaves the important question of the possibility of selecting an immune stock from a non-immune, however slight its susceptibility may be, still unproven.

While the plates—more especially when one has in view the price of the volume—are remarkably good, and delineate the characters of tuber and sprout with very considerable accuracy, one must demur at the manner in which the foliage has been portrayed. Apparently the artist, carried away by a desire for light and shade effects, has in most cases unconsciously produced an all too convincing picture of mosaic infection.

This particular volume is undoubtedly of value to those who may have occasion to handle continental stocks, but it is not so generally useful as the two preceding volumes of Parey's Pocket Atlas Series, viz., Nos. 1 and 2. These two volumes treat most efficiently of diseases common to all varieties and lands; the plates are of a very high order of excellence and convey a pictorial presentation which is as convincing as it is accurate. Every agricultural inspector should be armed with them. *Redcliffe N. Salaman.*

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[*] *Starch: its Chemistry, Technology and Uses*, by Lewis Eynon, B.Sc., F.I.C., and J. Henry Lane, B.Sc., F.I.C. Cambridge: W. Heffer and Sons, Ltd. Price 12s. 6d. nett.

[*] *Potato Varieties Immune to Wart Disease* (Parey's Pocket Atlas, Series No. 7). Edited by Professor Otto Appel, described by Dr. Karl Snell. Published by Paul Parey, Berlin, 1929; price 6s.

THE GENUS PRIMULA.

(*Continued from p. 186*).

LITTLEDALEI (Balf. f.). Littledale's P. (Rotundifolia.)

A BEAUTIFUL and remarkable species which closely resembles some species of Potentilla in leaf and habit. The thick, elongate, reddish rootstock is clothed with the dried remains of previous seasons' leafage, with curled and contorted stalks. The somewhat fleshy leaves, produced in dense tufts, have rounded, heart-shaped blades with upcurved margins, borne on short, slender, narrowly-winged stalks sheathing at the base, in all about three inches long; margins furnished with sharp, triangular teeth; upper surface pale green, sparsely clothed with sub-viscid, glandular down, underside densely clothed with meal-producing, glandular hairs. Flower stem mealy, about two inches tall, immersed in the foliage and bearing an umbel of about eight yellow, purple or mauve, white-eyed blossoms. Corolla flat, about three-quarters-of-an-inch across, with narrowly egg-shaped lobes, the margins of which are frequently furnished with blunt, regular teeth; tube cylindrical, about five-eighths-of-an-inch long, with a ring in the mouth. Flowers in July and August.

Grows in damp clefts of rocks in dense shade, in central and south-eastern Tibet, at 15,000 to 16,000 feet above sea-level.

Culture: Peat and granite chips, in a cool, shady spot, with protection from damp in winter, is indicated.

LITTONIANA (Forrest). Litton's P. (Muscarioides.)

A very handsome, deciduous, perennial species but difficult to retain as such in some localities. It produces a tuft of sub-erect or flaccid, lance-shaped, rather pointed leaves, tapering to a winged stalk, in all four to eight inches long; margins recurved, coarsely or finely toothed; both surfaces more or less smooth, grey-green. Flower stems one to two feet tall, fairly slender, erect, covered with white meal. Flowers in a dense spike up to five inches long, purple or bright lilac, with a deeper tinted tube, drooping, expanding from the base of the spike upwards. Buds and calyces blood-red. Corolla one-quarter- to half-an-inch across, bell-shaped or broadly funnel-shaped, divided into five lance-shaped or narrowly oval lobes. Introduced in 1908. (*Gard. Chron.*, July 10, 1909, Fig. 6, 7, 8; pp. 14, 15).

Grows in open meadows on the mountains flanking the eastern side of the Lichiang valley, in north-western Yunnan, at 10,000 to 11,000 feet above sea-level, and also in similar situations in south-western Szechuan.

Culture: Rich, moist loam in a sheltered but open spot suits it; it is quite hardy.

LONGIFLORA (All.). Long-flowered P. (Farinosae.)

A rather robust member of the Farinosa section, with a rosette of oblong-egg-shaped, rarely oval, leaves, from one inch to three inches long, pointed or blunt, tapering to a short, broad stalk; margins toothed or sub-entire; both surfaces mealy, underside densely so. Flower stem four to twelve inches tall, erect, bearing a many-flowered umbel of violet blossoms with yellow tubes. Corolla shaped like that of P. farinosa, about three-quarters-of-an-inch across; tube cylindrical, many times longer than the calyx. Flowers in June. (Illustrated in *Journ. Roy. Hort. Soc.*, Vol. XXXIX, 1913).

Grows in damp mountain pastures, extending from the Alps of southern Switzerland, throughout the Carpathians, to the mountains of the Balkan Peninsular and Armenia.

Culture: As for P. farinosa.

LONGIPES (Freyn. et Sintini). Armenian P. (Nivales.)

A beautiful, robust, perennial species with tufts of oblong-elliptic leaves from six to nine inches long, blunt at the tip, gradually tapering to a winged stalk; margins edged with regular, blunt teeth; upper surface more or less smooth, underside coated with yellow meal. Flower stem stout, six to fifteen inches tall, bearing an umbel of purple blossoms on somewhat stout stalks. Corolla about one inch across, with broadly heart-shaped lobes. This species flowers during June and July.

Grows in damp situations on the mountains of north-eastern Asia Minor.

Culture: Good, somewhat heavy loam, in a damp, open spot, but well-drained in winter, are its requirements.

LONGIPETIOLATA (Pax. et K. Hoffm.). Long-stalked P. (Nivales.)

This species produces a tuft of membranous leaves from one-and-a-half inch to three inches long, the outermost having orbicular-oblong, blunt blades on long, slender, winged stalks dilated and sheathing at the base, the innermost leaves with oblong or egg-shaped-oblong, pointed blades on slender stalks; margins toothed; both surfaces slightly mealy when young, becoming quite non-mealy when mature. Flower stem four to five inches tall, bearing an umbel of two to four pale violet or pale blue blossoms on mealy stalks a quarter- to half-an-inch long. Corolla about five-eighths-of-an-inch across, with oblong, blunt lobes; tube cylindrical below, dilated upwards, about half-an-inch long. P. longipetiolata flowers during June. It is not at present in cultivation.

FIG. 102.—LA SELVA: TREE PAEONIES.

(see p. 205.)

The plant grows on the mountains near Tatsienlu, in eastern Tibet, at about 13,500 feet above sea-level.

Culture: Good, rich loam and grit, in an open, damp spot, with protection from wet in winter, is indicated.

LONGISCAPA (Ledb.). Long-stemmed P. (Farinosae.)

This deciduous perennial is a sub-species of the variable P. farinosa. It forms a rosette of smooth, non-mealy leaves, one inch to three inches long, with lance-shaped blades tapering to a winged stalk about equalling the blade in length; margins entire or slightly toothed. Flower stem three to fifteen inches tall, slender or rather stout, bearing a many-flowered, umbel of rose-coloured flowers on slender stalks half- to one inch long. Corolla flat, about three-eighths- to five-eighths-of-an-inch across, with heart-shaped, notched lobes; tube cylindrical, approximately five-eighths-of-an-inch in length.

Grows in damp, open situations, usually in stony or rocky soil, ranging from eastern Russia, through central and northern Asia, to the sub-arctic islands of North America.

Culture: Conditions as advised for P. farinosa should suit it. *A. W. Darnell.*

(*To be continued.*)

HOME CORRESPONDENCE.

Lapagerias.—Having noticed the note by *W. P. W.* on Lapagerias, *The Gardeners' Chronicle*, February 23 (p. 145), in the great corridor at Messrs. J. Veitch and Sons' nursery, Chelsea, I may state that I can recall the wonderful display of blooms mentioned, as I was at the nursery fifty-two years ago. I may add that I have at the present time two fine Lapagerias, one white and one red, at the side of the door in our large conservatory; these cover several yards of the roof, and flower most profusely every year. *N. F. E., Surrey.*

Salix lanata var. Stuartii.—I am glad to have had the correct spelling of the varietal name of the above Willow from Mr. Fred. J. Chittenden (see p. 159). I was afraid it was a waif from the Continent whose history was unknown. For that reason I contented myself with a superficial examination, noting that it was distinct in several particulars from the Scotch plant. Had I known that it was raised in this country I would have given it a more critical examination. I am now satisfied that it is the hybrid S. lanata × lapponum, and in the general appearance rather nearer S. lanata than the other parent. The evidence of this lies in the stout twigs, the broadly-oval leaves, their short, sub-acute points, the copious woolly pubescence of the primordial leaves, and the faintly yellow hairs on the scales of the catkins when the buds have nearly burst. The evidence of S. lapponum lies in a thin pubescence on the mature leaves, their sub-acute points, less prominent secondary veins on the under surface, the less copious grey pubescence of the catkins, except for the faint yellow hue as the buds are just bursting, the copious pubescence on the very short pedicel of this ovary, and on the base and apex of the ovary itself. This pubescence on the pedicel and ovary could only come from S. lapponum, for the ovary of S. lanata is glabrous, and that of the former is white with pubescence in its early stages. The late Rev. E. F. Linton, in his Monograph, described S. lanata × lapponum, from south Aberdeen, as a new hybrid, so it is endemic to Scotland. His plant was more near the S. lapponum parent, and had longer points to some of the leaves. There is no evidence of S. repens in Dr. Stuart's hybrid, for I have specimens of S. lanata × repens, raised artificially by E. F. Linton in his garden at Bournemouth. The leaves of this hybrid have strongly twisted points and the copious silky pubescence, with the straight hairs lying parallel with the surface of the leaf, as in S. repens. I could not find a hair of this in Dr. Stuart's hybrid. This gentleman of Chirnside, it may be remembered, was the raiser of the miniature Viola Violetta. *J. Fraser.*

Lonicera Hedges.—I have not seen a hedge of Lonicera ligustrina var. yunnanensis (now called L. pileata var. yunnanensis), as referred to by Mr. J. Matchett Watson (p. 159), who must be in the forefront in making experiments. Curiously enough, I can find no reference to the plant he mentions in any of my books, although I have Alfred Rehder's *Manual of Cultivated Trees and Shrubs*, a very exhaustive book on the subject, dated 1927. He describes L. pileata and L. yunnanensis, but the former is useless for a hedge, and the latter a species quite distinct from L. pileata var. yunnanensis. I have planted, helped to plant or prune, hedges of Beech, Hornbeam, Hawthorn, Holly, Box, Yew, Ligustrum vulgare, L. v. sempervirens, L. ovalifolium, L. o. folius aureis, Euonymus japonicus in several varieties, Cupressus Lawsoniana, and C. nootkatensis; and have seen or heard of hedges of Lonicera nitida, Berberis Darwinii, B. stenophylla, Salix fragilis, S. Smithiana, S. viminalis, Prunus cerasifera, Populus canescens, and Alnus glutinosa. *J. F.*

Strelitzia Reginae.—Some four or five species of Strelitzia are known, all natives of South Africa, and S. Reginae is the most ornamental, if not the most curious. Apparently it is cultivated in the Canary Islands, for over three weeks ago some spikes of it reached Covent Garden Market, among other flowers from Madeira. Two of the spikes came into my possession, and although the flowers are now drying and shrinking, they still retain their colours in a remarkable degree. The three long, upstanding sepals are orange-coloured. One of the petals is very short and all three are deep blue or violet. The two lower and lateral ones cohere by their contiguous edges, and gradually narrow to the apex; the free edge of each, about the middle, is developed into an acute, deflexed auricle like an arrow, and this has given rise to the name Bird's-tongue Flower. The stamens lie within these long petals, and the style projects beyond them, becoming divided into three stigmas which project about an inch beyond the petals. Evidently this combination of petals, stamens and stigmas constitutes the platform on which the insects or other animals alight for the fertilisation of the flowers. The lower sepal of the uppermost flower seldom, if ever, gets out of the very thick, rigid spathe, and illustrations of the species show this defect. There is additional colour in this remarkable inflorescence besides the orange and blue of the flowers. Two or three inches of the upper part of the stem, and the base and the edges of the spathe are red, while the rest of the stem and spathe are glaucous. The plant is as easy to grow as a Canna in a warm house. *F.*

Partial Sterilisation of Soil.—In answer to various letters, I would like to make the following points perfectly clear. (1) Steam sterilisation under pressure is expensive, but effective, and is used by large commercial growers. The best method is to lay the steam-pipes in the house and sterilise the soil where it lies. If it has to be dug up and carted, as in Mr. Falconer's system (which is similar to the one Messrs. Clibrans have been using for years) the baking method is, to my mind, preferable, as in the steaming method there is the expense of the boiler, and no saving of labour. (2) The baking, if done at a temperature of 210°F. only, does not (*a*) burn the soil, (*b*) kill off the beneficial bacteria (as Mr. Summerfield suggests), or (*c*) cause plant foods to be given off as gas, any more than does the steam method. (3) We have, at the Cheshire School of Agriculture, carefully tried all known methods of sterilisation, including Mr. Falconer's method with steam from our dairy boiler; the Sterilatum; chemicals—formaldehyde and di-chlor-cresol, and the Reaseheath method of baking soil; and from our experiments, the latter method has proved itself to be the best. (4) The brick-built Reaseheath steriliser is an ideal method for the small man. Since my article on the subject (p. 67), giving plans, etc., I have seen some twenty or more of these brick-built structures built and in use. Some, holding only four barrow-loads of soil, were built at a cost of £2 only, others, holding five tons of soil, cost £15. May I thank the hundred or more readers of *The Gardeners' Chronicle* who have written me so helpfully on the subject. *W. E. Shewell-Cooper, Cheshire School of Agriculture, Reaseheath, Nantwich.*

——I am writing to express my gratitude to all those who have so kindly contributed to the discussion in *The Gardeners' Chronicle* on "The Partial Sterilisation of Soil." After having attended the growers' conference at Reaseheath, and heard Mr. Shewell-Cooper's eloquent plea in favour of baking, I felt that we here were lagging behind the wheels of progress by relying on the steaming process, which we had practised since Dr. Bewley published his book on *The Diseases of Glasshouse Crops*. The view I have now arrived at, however, may be summed up in the expression often used by a Scotch head gardener under whom I served: "One method is just as good as the other, if not a great deal better"; and after the very valuable contribution to the discussion of Messrs. Falconer and Hamilton, I am quite happy to continue with the steaming process, because, like Mr. Shewell-Cooper, here we are out for the cheapest and most efficient method, and in steaming we believe we have it, because we have had handed over to us for nothing an apparatus that meets our requirements, the fuel consumption of which is a mere detail, wood and small coal answering the purpose admirably. Like Mr. Falconer, my first experience, just thirty years ago, was by baking on a shovel, over the stoke-hole fire, when employed in the Royal Botanic Gardens, Kew, but this was for the raising of Ferns from spores, and, of course, we must take into consideration that Ferns, especially in the earlier stages, belong to a much more primitive type of plant life and possess the pioneer spirit, and can thrive in a much more barren medium than the more highly evolved types of glasshouse plants, fruits and vegetables. Replying to Mr. Shewell-Cooper's recent note (p. 145), it was to the above-mentioned improvised methods, and that portion of the soil resting immediately on the fire-box, to which I alluded in my first note, when I suggested the possibility of loss of plant food. I can see now, however, that if left to the inexperienced and disinterested worker, there are dangers in both methods. The soil we have sterilised by steam this year is quite A.1. as regards texture, and seeds are germinating and growing very satisfactorily, in spite of the very low temperature that has ruled of late. In no case have we had soil turn out like mud. *T. A. Summerfield, The Gardens, Alderley Park, Chelford.*

Erica darleyensis Flowering Late.—In his "Notes from a Welsh Garden," p. 142, Mr. A. T. Johnson describes Erica darleyensis as flowering about six weeks later than usual. I have grown this valuable Heath for between thirty and forty years and have found it to fail to flower in November or early December several times, and when this happened it did not bloom until after D. carnea had come into flower. I have never been able to account for this. This season, my plants of E. darleyensis have just commenced to bloom, while the varieties of E. carnea have been in flower since about the middle of January. *S. Arnott.*

Disease in Chrysanthemums.—Under the heading of a "New Disease in Chrysanthemums" published in *The Gardeners' Chronicle* of February 23, p. 133, Mr. Hugh MacSkimming, Auchenault Gardens, Helensburgh, is credited with its discovery. The suggestion that it might be caused by lack of potash by the East of Scotland College, is wide of the mark, as Mr. MacSkimming is one of the best growers, and believes in using plenty of potash in growing his Chrysanthemums. As time goes on the crop of new diseases seems to keep pace with the improvement and advancement of the Chrysanthemum, which is a very serious thing for market growers, and therefore deserves serious consideration. Can it be the case that propagation by division, cuttings, etc., has its limits? Does a variety peter out after a life limited to a number of years, varying in accordance with culture and treatment or constitution? Can stocks be weakened by over-propagation by division and cuttings? It has long puzzled naturalists why some forms of life propagate themselves by division and at the same time have male and female forms. It may be that in nature there is no real lasting propagation by cell division in the case of lower life, or root division (including cuttings, off-sets, runners, etc.) in the vegetable kingdom, but that all life must really hark back to male and female forms and their function for their real and lasting maintenance. In short, propagation by any means other than by seeds is merely a subsidiary functioning depending on male and female forms for its impetus, its maintenance and renewal. If this theory is correct, prolonged propagation, other than by seeds, will tend to deterioration of stock. In that case we may expect to find a much-propagated stock to gradually, or in some cases suddenly, show signs of exhaustion by growing sickly, erratically, or diseased. We may recall the case of the Hollyhock. It is mainly propagated by seeds now, and the dread disease that nearly wiped it out is little heard of, although still existent. Then we have the fruit-growers' complaints of "Strawberry sickness," and how the crops have shrunk until a really good crop is a thing of the past. It is not long ago since an appeal for help by a despairing grower appeared in the columns of *The Gardeners' Chronicle*. Is the solution to be found in raising plants from seeds from selected healthy stocks, not to use old Strawberry land, and to stop propagating from runners entirely, until we have a strong and robust stock? In the case of the Potato, the petering out of certain varieties after the lapse of a few years has been noted by observant growers. Change of seed sets has done much to keep down Potato disease, as growing the same variety year after year on the same ground from the same stock is sure to end in disaster. Is the Chrysanthemum to be the next subject to show signs of sickness and the diseases of exhaustion? It is a question for growers to seriously consider and only when one gets at the real root cause of a disease can anything be done to correct it. Mr. MacSkimming, in his lecture on "Late-flowering Chrysanthemums," reported in the issue of *Gard. Chron.* for March 2 (p. 171), advises the taking of cuttings only from plants that have done well. Plants that have shown any signs of weakening ought to be avoided. If the theory advanced here is correct, any plants showing disease or even irregularity ought to be destroyed, rather than run the risk of propagating disease. More attention ought to be given to the raising of new varieties from seeds obtained from clean, healthy, robust stock, as the use of this golden method of propagation is out of all proportion to the custom of raising stock from cuttings of existing varieties. If more attention were given to seed-raising, it would do something to preserve the balance in nature at least so far as the Chrysanthemum is concerned. *George Murray, Norcott Hill Gardens.*

Eucryphia cordifolia.—I enclose a snapshot (Fig. 103) of a fine example of Eucryphia cordifolia at Castlewellan. The photograph was, unfortunately, taken on a dull day, but the tree was perfectly beautiful and smothered with flowers. This specimen is rather more than less than thirty feet high, and is worth a journey from London to see, when it is in bloom. Is there a finer specimen in the British Isles? February has dealt with us very severely in Co. Down, and I fear that Daffodils will be very late; varieties that are often in flower at the end of January are not showing colour yet (March 2). *V. Slinger, Donard Nursery, Co. Down.*

FOREIGN CORRESPONDENCE.

AUTUMN TINTS IN JAPAN.

THE interesting article on "Autumn Tints at Wisley," in your issue of November 17, 1928, reminded me of a fine clump of Rodgersia aesculifolia which was grown there when I visited Wisley in 1925. The Horse Chestnut-like leaves were then of brilliant hue, there being none of more splendid crimson colouring, among any herbaceous plants I have ever seen. I forget the date on which I saw the plant, but the beautiful Primula Littoniana was in flower on the rockery at the time.

Our tiny island, called Shodoshima (latitude 34·5°), which is situated about seventy miles west of Osaka, is noted in Japan for the autumn tints of its trees and shrubs. Acer rufinerve and A. palmatum, Vitis Coignetiae, Euonymus alatus and Rhus succedanea are the most gorgeous among them. Acer rufinerve is a grand tree, with large, three-lobed leaves and lovely, green-coloured bark, a colouring retained for many years. Its autumn colouring is far more striking than that of A. palmatum. It loves somewhat shady and moist situations and produces seeds copiously, but, unfortunately, the larvae of an insect devours, in our island, many of them every year. The well-known and finest Vine for brilliant scarlet colouring is undoubtedly Vitis Coignetiae, which covers rocks and trees with strong, fast-growing growths, clothed with showy foliage. It is much sought after by the fanciers of so-called Japanese dwarfed trees, while the landscape gardeners use Vitis Coignetiae in Japanese gardens where an antique appearance is required. Euonymus alatus is a spreading shrub with corky-winged branches and yellowish-red fruits, which are lovely after the leaves have fallen, but its dominant feature is its autumn-tinted foliage, for the leaves show the most pleasing scarlet which, in time, turns to purplish-scarlet. It is worthy of more attention. Among many Japanese trees and shrubs, Rhus succedanea is one of the most striking in autumn. This tree has lustrous leaves, tinted in autumn with brightest scarlet; the colouring is not, so far as I am aware, equalled by any other member of the plant world. R. succedanea is native of southern Japan, extending to the Himalayas, from where, for English gardeners, the hardier type might be obtained. Rhus japonica and R. trichocarpa are also fine in their autumn colouring. The gall-nuts on the leaves of the former tree are gathered in quantity annually for the manufacture of tannin or preparations for medicinal purposes.

For its bright yellow effect, Lindera obtusiloba is one of the best. The large, broadly elliptic or ovoid, rounded leaves are usually shallowly three-lobed, but before these appear, the lovely, small, yellow flowers are produced, to be replaced by the small, round, red fruits in autumn. Ginkgo biloba also has fine, yellow autumn tints.

On seeing Ilex serrata in a garden or its native habitat, with abundant red fruits on its branches in winter, one easliy believes that this species is one of the handsomest fruiting shrubs. Celastrus articulatus is a high-climbing shrub common in Japan. In the autumn, the capsules dehisce widely into three lobes, whose pleasing orange-yellow colour, contrasting with the crimson seeds, makes, after the leaves have fallen, a lovely feature. Ilex latifolia is much prized in Japanese gardens for its large, thick, dark green, oval to oblong-lanceolate leaves; it is one of the best of the genus, and produces beautiful red fruits freely, these remaining until spring.

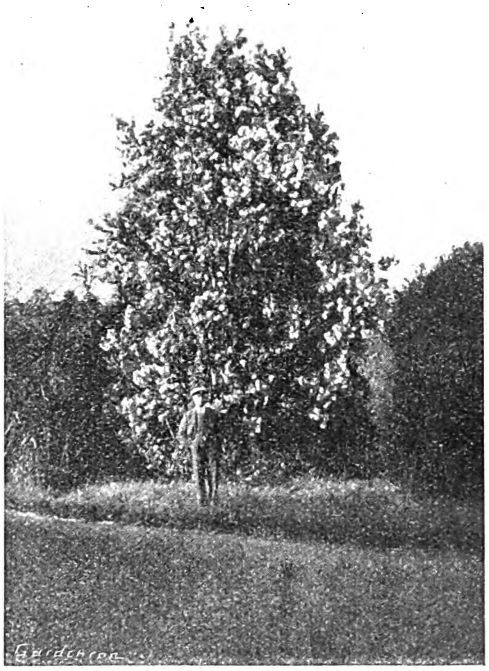

FIG. 103.—EUCRYPHIA CORDIFOLIA AT CASTLEWELLAN.

Nandina domestica is much planted in the gardens everywhere in Japan, for this graceful evergreen Berberidaceous shrub bears handsome, brilliant scarlet berries in clusters terminating the stems, which attain ten feet in height. The leaves of some forms of N. domestica turn rich scarlet in autumn.

On the mountains, I saw a few flowers on several Rhododendron lagopus, which is a very variable species. Some winter-flowering forms of Camellia japonica and C. Sasangua are fine at this time of the year—the end of December—while Daphne odora, Chimonanthus fragrans, Prunus Mume, and its horticultural forms, are commencing to flower. The white, fragrant flowers of Eriobotrya japonica are now being produced freely. *K. Yashiroda, Japan.*

FROST INJURY TO APPLE TREES.

DURING the recent very severe frosty weather which has been experienced at Long Ashton, some very serious cases of frost injury to Apple trees occurred on one of the experimental plots in the Research Station plantations. The injuries were first noted on February 26, but, as the trees had not been examined during the few days previous, it is probable that the injuries had been largely developed a few days before this date.

As the authorities of this Station are unaware of any cases of frost injury to fruit trees, other than damage to blossoms and foliage from spring frosts, having been previously recorded in this country, it seems important to place the present case on record without delay, since, if it proves to be an isolated one, it requires mention, and if other cases have been recorded it seems desirable that the data from so many cases as possible should be collected. Moreover, since the majority of growers are liable to be unacquainted with the nature of the various types of frost injury which may occur, it seems necessary to draw attention to some of these at once, and to the remedial measures usually adopted in such cases.

The writer hopes that growers who have noted any cases of damage will communicate particulars to him in order that a record may be compiled at this Station.

PARTICULARS OF INJURY AT LONG ASHTON.

The cases at Long Ashton on which damage has been observed are as follow:—

(a) A block of forty trees, variety Lane's Prince Albert, of which fifteen show serious damage and three slight damage.

(b) Three trees, variety Lane's Prince Albert, of a number interplanted among other Apple varieties on the same plot as the block in (a). The damage is serious in all three cases.

(c) One tree, variety Early Victoria, growing near the trees in (b); damage is medium and has developed from old growth cracks on the trunk.

(d) Three trees, variety Lane's Prince Albert, of a block of eighty-eight trees of this variety, growing on a plot adjoining the above. In two cases the damage is very slight, and in the other it is medium.

It will be seen from the above that the damage is practically confined to the variety Lane's Prince Albert. In all cases the trees are of comparable age, having been planted in the fall of 1919. Since the most serious case is that of the trees in (a), the particulars of this case are given in detail below.

It is also of interest that fruits of Lane's Prince Albert stored in a common store along with Bramley's Seedling, Allington Pippin, Bismarck and Newton Wonder, in a storage experiment, were badly frozen during the period February 11 to February 20, whereas the other varieties were not affected. King Edward VII was also affected, although not so severely as Lane's Prince Albert.

The character of the damage to the trees in all cases is similar, and is illustrated in the accompanying photograph (Fig. 104), in which one of the most serious cases is shown. The type of injury is that known in America as "bark-splitting."

With two or three exceptions, the main trunk is the affected portion, having split longitudinally, in all cases the injury commencing at a point immediately below the crotch region and developing downwards. In the worst cases the split is about twenty inches long, the width at the widest point being about five-eighths-of-an-inch, and the bark tissues have separated completely, leaving the bare wood exposed. Moreover, along the edges of the splits, in many cases, the bark has separated from the wood in a lateral direction for a distance of approximately one inch. In one or two cases the damage is in the crotch region, and in one it is on the basal portion of a main branch.

The location of the injury in all cases is on the south or south-west side of the tree, with one exception, where it is on the west side.

The site on which the forty trees are located is practically level, and it is significant that the trees comprise the south-west corner block of the plot, and that this portion of the plot is "open" to the south and west. The soil is a deep, fine sandy loam, and is conducive to vigorous growth in Apple trees.

The trees were planted in 1919, and are on various strong, layered stocks from the East Malling and Long Ashton selections. Since planting, the trees have been well cared for, and have made excellent growth. Cultivation has been high and, as the trees have been included in a manurial experiment relating to the use of nitrogenous manures in spring and autumn, they have been manured generously, all receiving annual dressings in winter of superphosphate at 3 cwts. per acre and sulphate of potash at 1 cwt. per acre, while one half of the trees have received nitrate of soda at 2 cwts. per acre each March, and the remainder a similar dressing, but in early August. The trees carried a light crop for the first time in 1927, and blossomed heavily and set a heavy crop in 1928, but this, unfortunately, was lost by injury from a post-blossom spray of colloidal sulphur which also caused the trees to shed about fifty per cent. of their foliage. The remainder of the foliage was shed about November 16, when high gales occurred, and much of the foliage was blown off without showing appreciable tinting.

The trees in the other groups cited above did not receive the colloidal sulphur treatment.

It should be mentioned that at Long Ashton, as is general throughout the south-west of England, fruit trees, as a rule, shut down growth comparatively late in the season owing to the mild, wet autumn conditions which usually prevail, ripening of wood thus often being rather poor, while the winters are generally comparatively mild, the lowest ground temperature at Long Ashton usually showing from 15° to 18°F. of frost.

It will thus be seen that the trees have grown under conditions favourable to rapid growth and rather poor wood ripening, although it cannot be said that they have been abnormal in this latter respect for trees in this district. It is important to note these conditions, since they are those which American horticulturists have found to render trees susceptible to frost injury.

A further point which is stressed by American workers as especially conducive to frost injury is *a rapid lowering of the temperature.* Temperature records obtained at Long Ashton during February show this condition to have obtained during the period from Febuary 10 to February 20, while the minimum temperatures "on grass" for that period were exceptionally low for the district.

The following records show these points:

Date.	In the Screen.		Grass.
	Max.	Min.	
1929			
Feb. 10 ...	45°F.	30°F.	25°F.
,, 11 ...	33°	27°	22°
,, 12 ...	28°	18°	18°
,, 13 ...	27°	9°	8°
,, 14 ...	31°	7°	6°
,, 15 ...	27°	12°	8°
,, 16 ...	33°	19°	21°*
,, 17 ...	36°	13°	12°
,, 18 ...	38°	14°	12°
,, 19 ...	34°	23°	15°
,, 20 ...	40°	26°	23°

Types of Winter Injury; Conditions Conducive to their Development; and Remedial Measures.

The following comprise the more common forms of winter injury occurring on fruit trees:

1. Root and crown injury—portion of root or bark in crown region is killed.
2. Sunscald—causing frost cankers in bark.
3. Crotch injury—bark injury in crotch region may cause cankers as in 2.
4. Bark splitting—bark splits longitudinally and becomes separated from wood.
5. Trunk splitting—bark and wood split (Fig. 104).

All the above injuries almost invariably develop in the first instance on the south or south-west sides of the trees, as in the Long Ashton cases, the reason being that these portions of the trees are subjected to the highest day temperatures and thus the temperature fall at night is greatest and most rapid for these sides.

The conditions recognised as conducive to the development of these injuries are late autumn growth leading to poor ripening; rapid falls to low temperatures and especially in the early part of the dormant season; and development of extremely low temperatures at any time during the winter.

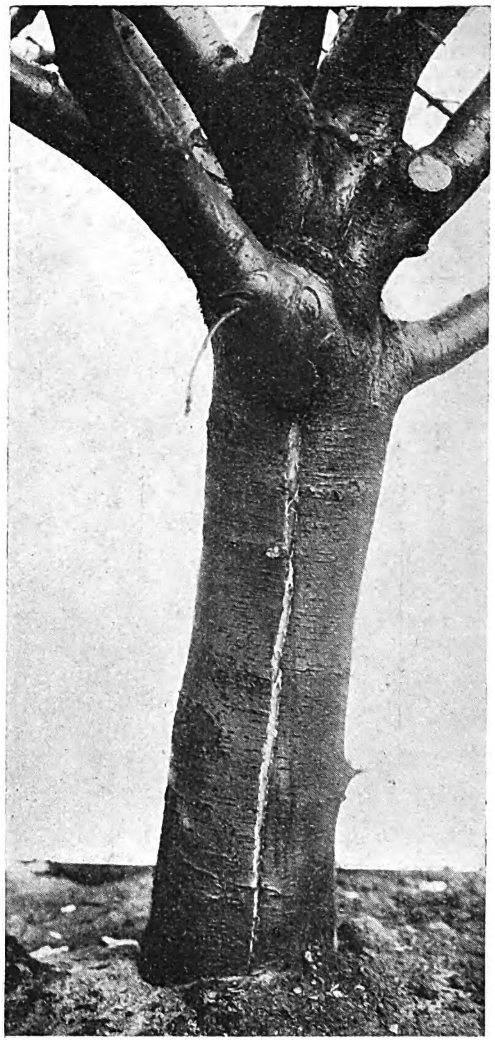

FIG. 104.—A LANE'S PRINCE ALBERT APPLE TREE SPLIT BY FROST.

The remedial measures usually proposed are as follow:—Adapt cultural methods to bring about early ripening of wood, and keep the roots well covered. Where cankers are formed treat these as for ordinary cankers. In cases of bark splitting, tack down the bark so soon as possible and cover with paint, etc., to prevent drying out and infections from organisms. If the bark fails to unite with the wood, cut the loose portion away. Where the trunk is split take measures as for ordinary cases of wood splitting, *e.g.*, binding, bolting, etc.

It may also be necessary in some cases, especially in cases of crown and root injury, to "bridge" the affected portion with long "bridge grafts" or in some cases young stocks are planted on the affected side and "arched" into the scion above the injury. *T. Wallace, Long Ashton Research Station.*

THE NATIONAL IMPORTANCE OF FRUIT-GROWING.—III.

(*Continued from p.* 190).

In the preceding article it was shown that the average Apple crop for England was in the neighbourhood of two tons per acre, and that Mr. Seabrook was one of the very fortunate minority succeeding in producing seven tons per acre, with his two most profitable varieties. His actual crop, however, would appear to be even higher than this, since he states that, unless small Apples will fetch at least £5 a ton, he does not bother to pick them up.

His average price also is more successful than that of many growers. For Bismarck and Worcester Pearmain he gives it at 6s. 2d. a bushel, or about £18 a ton for a seven-year average, including a certain quantity of small Apples, sold at £5 a ton. Owing to the quantity of low-grade Apples marketed, and the absence of standardisation on our markets in the past, it is impossible to give an average price for Apples which would be anything but misleading.

Mr. Seabrook further states that, during the period of sharpest competition with overseas Apples in September and October, his firm was able to obtain a price for Worcester Pearmain 5s. to 10s. a bushel more than that obtained for Californian Gravensteins similarly packed. In this respect he is again fortunate, as the following figures taken from *The Fruit Grower* for 1928 will show:

	Worcester Pearmain.		Gravenstein.
Sept. 13	14/-	...	12/-
,, 20	14/-	...	14/-
,, 27	14/-	...	15/-
	———	...	———
Average	14/-	...	13/8

These figures compare Worcester Pearmains and Gravensteins in boxes on the same market at the same date, and show that for similar grades of British and imported Apples there is little difference in price.

It would appear, therefore, that, as the average return for similar samples of British and overseas Apples similarly packed is about the same, the competitive position of the British and overseas grower is determined by the cost of production and marketing. Mr. Seabrook gives the cost of production of a bushel of British Columbian Apples as 4s. 6d., and the freight charges as 4s. 2d. He also states that the journey from Essex to Glasgow, about the longest ever necessary in Britain, costs 1s. 3d. These figures show an advantage of at least 2s. 11d. a bushel on freight charges to the British grower, when the Apples are sold on the same market, and appear, from Mr. Seabrook's paper, to indicate a nett advantage of a similar amount, when neither he nor his overseas competitor is marketing out-of-season fruit. One is, however, tempted to wonder whether the British grower can count on producing his Apples at 4s. 6d. a bushel as can be done in British Columbia.

Mr. Seabrook reckons his costs of production at per acre, and, in his analysis, shows them to be £40 per year after the tenth year. No depreciation is allowed for, since it is assumed that "cost of establishing has been defrayed by interplanted soft fruits." This assumption does not seem to be warranted, mainly because a ten-years-old orchard cannot be said to have no value. He states that, owing to interplanting, and consequent receipts from soft fruits, the orchards show no debt by the time the Apples come into bearing. But neither do they show any profit. If the soft fruits and top fruits had been separately costed, there would, presumably, have been a profit on the former, while the latter would have come into valuation at ten years old at their proper capital value.

Again, Mr. Seabrook includes marketing costs in his figure of £40 per acre for production. These costs must vary with the crop, and Mr. Seabrook's own figures, based, apparently, on a crop of 300 bushels or five tons, show £15 10s. 0d. for carting, packing and carriage, and £2 10s. 0d. for picking. For a crop of two tons the first figure would be reduced to two-fifths, and the second, owing to a rather higher rate for a thinner crop, to about half, bringing them to about £6 4s. 0d., and £1 5s. 0d. respectively. Ignoring costs of picking and marketing, Mr. Seabrook shows a cost of production of £22 an acre, to which should be added depreciation on the lines suggested in the preceding paragraph.

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* Thermometer under snow.

The cost, then, of picking and marketing is about £3 15s. 0d. a ton, while that of production varies with the crop, being, for five tons an acre, £4 8s. 0d. plus depreciation, and for two tons, £11 0s. 0d., plus depreciation, in each instance taking Mr. Seabrook's figures of cost per acre. The grower who obtains an average crop of two tons an acre is therefore unfortunate in having a far greater cost of production than those who, like Mr. Seabrook, are able to average five to seven tons. *A Norfolk Grower.*

(*To be concluded*).

MARKET FRUIT GARDEN.

The wintry weather of February was experienced to the full in my south-eastern district, except that there was no snow to speak of. Severe frosts occurred night after night, and often held throughout the day as well. More than 20° of frost were registered in the air on several days, and no doubt the thermometer fell still lower on the ground. As a fruit-grower, I have no complaint to make about this exceptional weather. It held vegetation in check, so that now a late flowering period is certain; and this is generally a thing to be desired. Then the frost must have done a great deal of good to the land, a benefit which will be realised when the time comes for cultivation. On days when the surface soil did thaw for a few inches, there was quite a good tilth among bush fruits, almost as if the first hoeing had already been done. Often by this time the soil has become beaten down and hard after the winter's rains. The dryness has, I think, been the greatest blessing of all. Rain fell on only six days during February, the total precipitation being only ·81 inch.

There was, of course, some little difficulty in finding useful work for the men during the cold spell. Pruning was just endurable except on a few days when the wind was too keen. The unskilled hands were able to carry on with the grubbing of trees in an over-crowded plantation, although the ground being frozen to a depth of six inches or more made it rather slow work. The application of manures was also possible. Winter spraying was almost finished before the weather turned cold, and was completed on one or two days when the temperature rose above freezing. A certain amount of planting remains to be done so soon as the ground has thawed. I have never seen the grass in the older orchards so completely browned by frost, helped by the winter spraying. There is scarcely a green blade showing.

Strawberry Troubles.

It seems hardly possible to doubt that the investigators at the Long Ashton Research Station have discovered the chief cause of the widespread trouble with Strawberries in the Strawberry aphis, a pest which has been found in this country only in recent years. This, at any rate, was the conclusion I came to after hearing a lecture on the subject by Mr. Staniland of that station, and seeing the lantern slides with which he illustrated his remarks. The main trouble in most districts is that known as small leaf. In some cases this condition is caused by root injury done by digging too close to the plants, or by crown injury done with the hoe, or even by slugs or leather-jackets; but in such cases the plants may recover in the following season. Water-logging is another cause of small leaf. In the great majority of cases, however, where small leaf is widespread, it is due to Strawberry aphis. Gardeners often conclude that their crops are not suffering from aphis because they cannot find the insects on the plants showing the small leaf symptoms. This is because, by the time these symptoms become prominent, the aphides have exhausted all the sugar in the sap and have left the plants to find fresh quarters on others. They should therefore be looked for on the plants which still appear to be healthy. They are seldom numerous, and will be found only on the youngest leaves at the crown of the plant, since they desert the leaves as they exhaust the sugar and pass on to younger ones. There is no recovery from small leaf caused by aphis. Owing to the absence of sugar the plants do not bear fruits; and they go from bad to worse, the final stage being the dying condition known in some districts as "patch" and hitherto thought to be a separate disease.

Mr. Staniland holds out no hope for Strawberry growers who are not prepared to control the aphis by spraying or dusting. When runners are bought they should be dipped in a solution of half-an-ounce of nicotine (ninety-five per cent. pure) in ten gallons of water with enough soft soap to produce a lather on agitation. This ensures a clean start. But reinfestation by aphides must be expected in all places where Strawberries are grown by neighbouring gardeners. For this reason it is essential to spray or dust the plants each year after the crop has been picked. For year-old plants spraying with the wash already mentioned is the best treatment. Older plants are probably better dusted with a nicotine powder insecticide applied with a proper dusting machine. Spraying or dusting should be done immediately after picking is finished, and should be repeated four or five days later. As an alternative, suitable only for growers in an isolated position where spring reinfestation from neighbouring beds is less likely, winter spraying may be done, while the plants are quite dormant, with tar distillate wash at two per cent. strength. This burns the outer leaves, but does no ultimate harm. Burning off the straw litter over the plants after picking has given a satisfactory control in some cases, but not in others. It is uncertain in its effect owing to the variation in weather conditions when the work is done.

Other familiar troubles among Strawberries are red-plant and Cauliflower disease, both of which are possibly caused by eel-worm. These are nothing like so widespread as small-leaf, and can only be dealt with by rogueing the beds every year and destroying affected plants. Obviously they should never be propagated from. Runners should be bought only from raisers certified by the Ministry of Agriculture as having thoroughly rogued their stocks. Certificates are not granted until inspectors are satisfied that all doubtful plants have been destroyed. Super-certificates are allowed only to those who de-blossom the plants from which they take runners, a practice which produces stronger plants.

Effect of Grass on Fruit Trees.

As I am much interested in grassed orchards, I have been reading again the reports of the old Woburn Experimental Fruit Farm, in which Pickering describes his investigations into the effect of grass over the roots of fruit trees. At Ridgemont, on thin soil over Oxford clay, grass had a most harmful effect on the trees, more so than it has in most places. Growth was almost entirely arrested and the trees became hopelessly stunted. Pickering therefore set himself to find out how the grass brought about this effect. Mainly by means of pot experiments, he satisfied himself that it was not a matter of soil aeration, moisture, temperature, plant food or bacteria. He considered, therefore, that this left only the possibility of the formation by the grass of some material actually toxic to the trees. He had great difficulty in proving this, but in the end claimed that he had done so. First of all he tried watering trees in pots with the leachings from grass grown in sand without manure. So far from the trees objecting to this, some fifty-eight per cent. increase in vigour resulted from the use of the leachings.

In another attempt to find evidence of a toxic substance, soil from under grass and soil from tilled land were compared by germinating seeds in them. Here again the result was in favour of the grass. Pickering considered that these failures indicated that the toxic material must be of a very unstable nature, easily oxidised by exposure to the air and changed into some substance actually beneficial to the trees. The final step was to arrange trays with perforated bottoms over the soil or sand in the pots in which the trees were growing, and to grow grass in sand in these trays. In this way it was hoped that the trees would receive the leachings from the grass without the possibility of oxidation by the air, while the grass would not be able to extract plant food from the soil below the bottoms of the trays. Thus, at last, some evidence of a toxic influence by the grass was obtained, although it was not of a very convincing nature.

Modern Ideas.

I do not know whether the present generation of research workers recognise Pickering's conclusions, but I rather think not. Pickering described the grass effect quite correctly as follows:—Reduced growth and vigour. Smaller leaves and those of light colour and unhealthy appearance. Autumn tints acquired earlier than on tilled land. Light-coloured bark. Small fruit of very high colour. Now these symptoms, thanks to Wallace's famous manurial experiments, are recognised as being simply those of nitrogen starvation. That the grass effect can be overcome by generous manuring has been shown by many growers who have run pigs or poultry under the trees. In some cases, in fact, the trees have been rendered too vigorous by such means. In America the annual application of nitrogenous fertilisers has been found to answer in the same way. This treatment has only recently begun to receive attention in this country, but it has generally proved successful. That there are difficulties in certain conditions I know from my own experience; but I believe it is only a matter of giving enough manure and possibly of finding the best source of nitrogen to suit the soil. If Pickering was right about grass forming a toxic substance, he was certainly right also as to the very unstable nature of that substance, for it is evidently easily overcome. As a matter of fact, he did produce evidence of the grass effect being reduced by feeding, although he made light of it. He found that the effect was much less on some soils than on others. He mentions one case in which the influence was nil, this being where the ground had been cultivated previously for growing vegetables, and was therefore in rich condition. *Market Grower.*

FRUIT REGISTER.

APPLE ADAMS'S PEARMAIN.

This old favourite has completed its century and still figures in any considerable collection on the exhibition table, although it is seldom seen even there at its best—*i.e.*, five or six ounce fruits with a colour like that of the rising sun. The fruit has such a distinctive flavour that anyone familiar with it could recognise it in the dark.

Adams's Pearmain makes a perfect bush, neither too spreading not too upright, and its long, supple shoots feather well if shortened moderately. It comes into bearing fairly early and is a regular cropper, although not unduly heavy. Gathered in late October and stored well, the fruits may be kept in good condition until the end of March. A characteristic of it is its rather narrow, spoon-shaped leaves, while its time of flowering is a little on the early side of mid-season. Nothing is known of its parentage and history, except that it is named after the man who introduced it. *A. Petts.*

SOCIETIES.

ROYAL HORTICULTURAL.

March 12 and 13.—The first two-day show of the year, which was held in the new Horticultural Hall, Westminster, was rather a small one, but the attendance was exceptionally good. Orchids were shown extensively, and while Cymbidiums were especially prominent, there were also very good Cattleyas, Cypripediums, Oncidiums, Dendrobiums and other genera. The Orchid Committee recommended one First Class Certificate and five Awards of Merit to novelties, and three Gold Medals to the very best of the admirable groups. Rock garden exhibits were staged in increased numbers, and these are now becoming very attractive. Forced shrubs, Roses and Carnations were shown in good quality. The Floral Committee recommended four Awards of Merit to novelties. The Narcissus and Tulip Committee met, but had no novelty of moment, although there were several groups of early flowers. The Fruit and Vegetable Committee made sympathetic reference to the loss it, and horticulture generally, has sustained through the death of Mr. Peter C. M. Veitch; there was no novelty of merit, and only a collection of Onions in the hall for consideration.

Orchid Committee.

Present: Mr. Frederick J. Hanbury (in the chair), Mr. Gurney Wilson (Hon. Secretary), Colonel Stephenson Clarke, Mr. A. Dye, Mr. H. G. Alexander, Mr. S. Flory, Mr. Charles H. Curtis, Mr. H. H. Smith, Mr. J. E. Shill, Mr. A. McBean, Mr. T. Armstrong, Mr. T. W. Taylor, Mr. Fred K. Sander, Mr. J. Cowan and Mr. S. Low.

First Class Certificates.

Cymbidium Gold Crest (parentage unknown).—A very bold Cymbidium, with substantial flowers of fine form. The sepals and petals are pure white and the lip is also pure white, save for a golden crest and one or two small, rose-purple dots; the column is also rose coloured. Shown by Sir William Cooke, Bart. (gr. Mr. W. Butcher), Wylde Court, Hampstead Norris, Newbury.

Awards of Merit.

Cymbidium Ralph Sander, Old Quarry variety (C. Cooperi × C. I'Ansoni).—A very striking hybrid represented by a plant which carried two spikes and an aggregate of nineteen flowers. The sepals and petals are bronzy, with buff base, and the lip is pale cream, with heavy, red-brown markings. Shown by W. J. Burstow, Esq., Old Quarry, Haywards Heath.

Cymbidium Pipit var. Mandarin (C. Gottianum × C. Miranda).—A very distinct hybrid with buff, pink-shaded sepals and petals, with a few faint purplish lines; lip buff, shading to pale yellow and freely marked with bright yellowish-brown. Shown by Messrs. H. G. Alexander.

Phalaenopsis amabilis var. Elisabethae.—This was shown as a hybrid between P. amabilis and P. Rimestadiana. It is a beautiful Orchid, with large, white flowers of excellent form and substance. Shown by Messrs. Sanders.

Brasso-Laelio-Cattleya Vashti (Laelio-Cattleya Beatrice × B.-C. Bianca).—A glorious Orchid, with very big flowers; the wide and fringed petals are palest pinky-mauve, and the sepals a trifle lighter. The lip is wide, rounded, frilled and of a rich purple colour, with mauve throat and white column. Shown by Messrs. J. and A. McBean.

Laelio-Cattleya Vega (L.-C. Soulange × L.-C. Rubens.).—A hybrid of particularly beautiful form and colour; the petals are of unusual width and of soft rosy-mauve colouring; the sepals are a trifle paler. The wide, shapely and frilled lip is of the richest crimson-purple colour, with yellow and orange in the throat. Shown by Messrs. J. and A. McBean.

Groups.

Robert Paterson, Esq. (gr. Mr. Merry), Stonehurst, Ardingly, put up a very fine group in which all the plants were admirably arranged. Cymbidiums were the leading feature, and of these we were particularly attracted by C. Ceres, C. Miranda var. Golden Oriole, C. Pauwelsii in variety, C. Yellow Hammer, C. Ringdove, C. Curlew, very fine, C. Landrail, C. Gannet and C. Gottianum. Odontoglossums included O. Naomi, O. crispum var. xanthotes, and other varieties, O. Conquest and O. Caroline. Lycastes and Cypripediums were shown capitally, and the latter included C. Maudiae, C. Tom Worsley, the pretty C. Boltonii, and the handsome C. Lord Wolmer var. Plutus. There were many other Orchids in this fine exhibit, notably Miltonia Kennie, M. Beau Brummel, Tetramicra bicolor, Saccolabium bellinum with three spikes of its quaint flowers, Odontioda Bradshawiae, and Laelio-Cattleya Eunice var. alba with seven spikes (Cultural Commendation).

In the bright exhibit made by S. G. Brown, Esq. (gr. Mr. Thurgood), Brownlands, Shepperton, there were capital plants of Dendrobium Gatton Monarch, D. atro-violaceum, Odontoglossum Pescatorei, various Cymbidiums, Sophronitis grandiflora, Oncidium Cavendishianum and the old Laelia harpophylla. In Mr. J. Evans' group we noticed the chaste Cattleya Mary Sander with three big blooms, Cypripedium Vashti, Odontoglossum Penelope with two spikes of brilliant flowers, O. Mirum, O. triumphans, Miltonia St. Andre and good Cymbidiums. Cypripedium Pixie, various Cymbidiums, Dendrobiums and Odontoglossums were shown by Mr. H. Dixon.

A bright display of Cymbidiums was staged by Messrs. J. and A. McBean, and they showed handsome spikes of C. Venus, C. Alexanderi in variety, C. Ceres, C. Redstart and C. Carol. Laelio-Cattleya Arcturus—an anceps hybrid—was conspicuously good, while L.-C. Euripides, L.-C. Perfection, Cattleya Lady Veitch, C. Jupitus, Brasso-Cattleya Cliftoni var. magnifica, Brasso-Laelio-Cattleya Vashti and Epiphronitis Veitchii were all finely shown.

Messrs. H. G. Alexander, Ltd., made a brave show of Cymbidiums in great variety. In such a fine collection it is only possible to mention a few that especially arrested our attention; these were C. Petrel, C. Ophir, C. Butterfly, with a glorious spike of flowers; C. Eagle, of lovely form, C. Rosanna, the old C. Lowio-grandiflorum, C. Bullfinch, of deep colour, C. Widgeon, C. Starling, very pretty and of unique colouring; C. Pauwelsii with three splendid spikes, C. Miranda, C. Bustard, and the round-flowered C. Merlin.

Another particularly fine display was made by Messrs. Sanders, who also made a special feature of Cymbidiums, embracing good plants of C. Ceres, C. St. Andre, C. Pauwelsii, C. Iris, C. Vesta, C. Ralph Sander, C. Egret, C. Erica Sander, C. Mary Sander and C. Holfordianum. This firm also showed Phalaenopsis amabilis var. Elizabethae, P. Schilleriana, Aerides Vandarum, Miltonias in variety, Coelogyne lentiginosa, Maxillaria luteo-alba, Epidendrum Stamfordianum, Lycastes and Odontoglossums.

Messrs. Charlesworth and Co. presented a very bright group, and although they showed Cymbidiums, they made Odontoglossums and Odontiodas a special feature of their exhibit. Among the Odontoglossums a few outstanding sorts were O. crispum in variety, O. Zulu, O. Minotaur, O. Venus, O. Camilla, O. Indian Prince and the pretty O. Réve d'Or. The chief Odontiodas were O. Lady Patricia Ramsay, O. Alcazar, O. Acis and O. Lydia. Other good things were Miltonia Vida, Odontonia Ceres and Brasso-Laelio-Cattleya Joan, with golden flowers.

In Messrs. Stuart Low and Co.'s group we noted good examples of popular Cymbidiums, Lycastes, Cypripediums and Dendrobiums, with good plants of Laelio-Cattleya Sladdenii, Platyclinis glamacea, Dendrobium linguaeforme and Odontioda Bradshawiae.

Messrs. Cowan and Co. showed a selection of Cymbidiums, Odontioda Bradshawiae, a fine series of varieties of Lycaste Skinneri, Cattleya Clotho, C. Tityus (very fine), Brasso-Laelio-Cattleya Grace, Dendrobiums and Odontoglossums.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. G. W. Leak, Mr. Charles E. Pearson, Mrs. Helen Lindsay Smith, Mr. D. B. Crane, Mr. William Howe, Mr. J. M. Bridgeford, Mr. D. Ingamells, Mr. W. Cuthbertson, Mr. Courtney Page, Mr. A. E. Vasey, Mr. James B. Riding, Mr. W. B. Gingell, Mr. J. T. West, Mrs. Ethel M. Wightman, Mr. Arthur Turner, Mr. C. F. Langdon, Mr. E. R. Janes and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. W. J. Bean, Mr. W. G. Baker, Mr. George Harrow, Mr. G. Reuthe, Mr. A. Bedford, Mr. L. R. Russell, Mr. W. B. Cranfield, Mr. T. Hay, Mr. F. G. Preston, Mr. Mark Fenwick, Mr. Reginald Cory, Mr. Hiatt C. Baker, Mr. R. D. Trotter, Mr. E. H. Wilding, Mr. R. C. Notcutt, Lady Beatrix Stanley, Mr. Clarence Elliott, Mr. J. Comber, Mr. E. A. Bowles, Mr. G. Yeld, Mr. R. W. Wallace, Mr. C. T. Musgrave and Mr. N. K. Gould (Secretary).

Awards of Merit.

Clivia Ursula.—This is a very fine variety. It has a large umbel of rounded flowers of rich orange colour, paler in the centre. Shown by the Hon. Mrs. R. James, Richmond, Yorkshire.

Freesia Beauty.—A good spike of rounded, mauve-flushed flowers which have a few rays of the same colour and a yellow throat.

Freesia Maryon.—The perianth segments of this variety are more pointed, and they are of lilac colour, with a white throat.

Freesia Mrs. R. F. Felton.—This is a deliciously fragrant variety. It is of robust habit and has large, rounded flowers of pale creamy-yellow colour passing to pale yellow. All the Freesias were shown by Mr. G. H. Dalrymple.

Cultural Commendation.

Leucadendron plumosum.—A well-grown plant in a large-sized flower-pot was shown by the Hon. Mrs. Ryder (gr. Mr. William Lowe), Durns, Beaulieu, Hampshire.

Other Novelties.

In addition to those which received awards, Mr. G. H. Dalrymple showed several attractively coloured Freesias; the variety Tangerine was especially prominent. Mrs. Carl Holmes (gr. Mr. W. G. Penton), The Node, Welwyn, Herts., showed two good Anthuriums. A. Scherzerianum, var. Mrs. Carl Holmes has a very large, well-formed, crimson spathe, while the variety Mr. Carl Holmes has an equally large mottled spathe.

Groups.

On a considerable floor space, Messrs. L. R. Russell, Ltd., set up an attractive group of forced shrubs. The chief sorts were double-flowered Cherries, double Peaches, flowering Crabs, Lilacs, Brooms, Magnolias, and Ghent and Mollis Azaleas. Messrs. Patricks grouped a good selection of Conifers with Daphne Mezereum, Erica carnea and Gaultheria procumbens. Several very floriferous plants of Japanese Azaleas, notably the varieties Hatsigiri, Alice, Atalanta and Cleopatra, were displayed by Messrs. D. Stewart and Son, who also had good bushes of Rhododendron praecox, with Snowdrops, Iris reticulata, Muscari and other spring flowers.

At the end of one of the tables, Messrs. Waterer, Sons and Crisp made an attractive display with Osmanthus Delavayi, Rhododendron praecox, several of the dwarf Irises, such as I. reticulata and its Persian forms, and Iris Sindpers. They also had good batches of Saxifraga Myra and S. Jenkinsae. Messrs. Hollambys staged a number of plants of Gaultheria procumbens, well-furnished with bright fruits, Primula Purple Splendour and Daphne Mezereum. In a boldly arranged, little rock garden, Messrs. Casburn and Welch planted Saxifraga Burseriana sulphurea, S. B. tridentata, S. Irvingii and Iris reticulata. The Misses Hopkins had many good blue Primroses in their rock garden.

In a pleasantly designed sandstone rock garden, Messrs. W. Wood and Son planted good breadths of Primula frondosa, P. Barrowby Gem, Scilla sibirica, Muscari azureum, Anemone fulgens, Narcissus minor and other spring flowers. Messrs. M. Prichard and Son had many very beautiful plants of Dicentra (Dielytra) spectabilis, with Magnolia stellata, and Viburnum Carlesii behind breadths of Primula dentata varieties, the double lilac Primrose, Saxifraga oppositifolia, S. Mrs. G. Prichard, S. Delia and S. R. V. Prichard.

At one end of a table space, Messrs. Barr and Sons had a particularly attractive grouping of spring flowers, including Crown Imperials, Narcissus canaliculatus, N. Queen of Spain, N. W. P. Milner, many of the valuable dwarf Irises, Dog's Tooth Violets and Cyclamen ibericum var. roseum. At one end, there was a very good selection of spikes of Lachenalia. Mr. George E. P. Wood placed a very large bush of Forsythia spectabilis in the centre of his exhibit, and also showed dwarf Conifers, Crocuses, Saxifrages, Primulas and double Daisies.

Messrs. W. Cutbush and Son made good use of a low tabling, where they grouped many excellent plants of Azalea indica and A. rustica varieties, with good Freesias. Messrs. Wallace and Co. contributed some very good Azaleas, Tulipa Eichleri, T. praestans, various Irises, Primulas and Crocuses, with Brooms and Japanese Maples. Mr. G. Reuthe staged Mimosas, Rhododendrons, Ericas and alpines. Mr. Clarence Elliott had dwarf Conifers, Crocuses, Saxifrages and Eranthis in his rock garden.

Near their Carnations, Messrs. Stuart Low and Co. grouped Camellias, Mimosas and Erica melanthera. Mr. G. H. Dalrymple had a good group of his coloured Freesias. The chief varieties were the new Maryon, Grey Dawn, of greyish-lavender colour; Tangerine, deep orange; Sunshine, bright yellow; and Mrs. R. F. Felton. Messrs. Sutton and Sons set up floriferous plants of multiflora Hyacinths in batches of pink, blue, white and scarlet.

Mr. George Prince again showed branches of the yellow Banksian Rose, with Fortune's Yellow, Austrian Copper, and cut blooms of Etoile d'Hollande. Messrs. C. Engelmann, Ltd., staged a good group of Carnations, including the varieties Mrs. H. Fellowes, Mrs. A. J. Cobb, Topsy, Spectrum and Radiolite. In their group, Messrs. Allwood Bros. had very good vases of Wivelsfield Claret, Wivelsfield Buttercup, Spectrum, Rapture and Shot Silk, and also showed bowls of the pretty little Dianthus Allwoodii varieties. Messrs. Stuart Low and Co. gave prominence to the varieties Thomas Ives, White Pearl, Eileen Low and Spectrum.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. C. C. Titchmarsh, Mr. H. Smith, Mr. W. B. Cranfield, Mr. Charles H. Curtis, Mr. J. S. Arkwright, Mr. Peter R. Barr, Mr. F. A. Secrett, Miss E. Willmott, Mr. A. W. White, Mr. George Monro, Mr. G. W. Leak and Mr. A. Simmonds, (Secretary).

There were no novelties exhibited before this Committee at this meeting.

Groups.

There were several bright displays of bulbous subjects on this occasion, Hyacinths and Narcissi being especially prominent.

Messrs. G. W. Miller had a charming group of Narcissi, among their most attractive sorts being Flame, Comrade, Campernellii gigantea, Dosoris and Betha, good trumpet Daffodils being King Alfred, Victoria, Empress and Dominion, together with several cream-coloured seedlings. At the front of this group were spikes of various Hyacinths, and grand clumps of Crocuses, in such varieties as Albion Stripe, purple, with paler stripes and shading; Maximilian, President Faure, General Gordon, Albion Purple, purpurea grandiflora and Baron von Bruno.

A large and splendid group of Tulips, Narcissi, Hyacinths and Crocuses, in ornamental bowls, was set up by Messrs. R. H. Bath, Ltd., Trumpet Daffodils were well represented, among them being such good sorts as Buxted, Glory of Noordwijk, Olympia and The Don. Other attractive Narcissi in this collection included Lucifer, Phyllida, Crystal Queen, the double-flowered Inglescombe, Lord Kitchener and Aspasia. Among Tulips were Yellow Prince, Ibis, Van der Neer, Enchantress, La Réve, William Copland, Prince of Austria, and De Wet, while Hyacinths included Gertrude, rose-pink; and Gigantea, pale pink. The varieties of Crocuses displayed in this admirable collection included purpurea grandiflora, Sir Walter Scott, Lilacens, Mikado and Hero.

Fruit and Vegetable Committee.

Present: Mr. C. G. A. Nix (in the chair), Mr. H. S. Rivers, Mr. F. Bostock, Mr. P. D. Tuckett, Mr. G. F. Tinley, Mr. W. F. Giles, Mr. A. Poupart, Mr. J. Wilson, Sir W. G. Lobjoit, Mr. H. A. Prince, Mr. E. Laxton, Mr. W. Bullock, Mr. R. H. Hall, Mr. H. Markham, Mr. Edwin Beckett, Mr. W. H. Divers, Mr. E. A. Bunyard and Mr. A. N. Rawes (Secretary).

The Committee, before proceeding with the general business, placed on record its regret at the passing of Mr. P. C. M. Veitch, who died on Saturday last, and passed a vote of condolence to his relatives.

A seedling Apple was exhibited before the Committee, but was not of sufficient merit to receive any recognition.

Groups.

The only exhibit of vegetables at this meeting was a small collection of Onions, staged by Messrs. Sutton and Sons, the bulbs displayed being of perfect shape and in excellent condition. Among those with large bulbs were Ailsa Craig Selected, Improved Reading, and Selected Brown Globe, other varieties represented being Crimson Globe, Long Keeping, Reading, Bedfordshire, Sutton's Perfection, James' Long Keeping and Rousham Park Hero. There were also excellent baskets of Sutton's Giant and The Sutton Shallots, the latter a red-skinned sort, and also of Garlic bulbs.

READING GARDENERS'.

The fortnightly meeting of this Association was held in the Abbey Hall on March 4, when a large attendance of members, under the chairmanship of Mr. W. Broomfield, heard an interesting lecture on "The use of the Modern Dahlia in the Garden," by Mr. A. H. Fulker, The Gardens, Elmhurst, Reading, one of the most successful exhibitors of Dahlias in the district. In his opening remarks he said he had taken a great interest in the growing of Dahlias, especially since the war, for the cost of maintaining our gardens had doubled, and consideration therefore had to be given as to the best plants to grow to keep gardens gay throughout the summer and autumn at the least possible cost, and although not decrying the early-flowering Chrysanthemum and other summer and autumn flowers, in his opinion there was no other plant to equal the Dahlia for ease of culture, the brightness of its bloom, and continuity of flowering, for it could be had in bloom from June until cut down by frost. Full details were given of its propagation by cuttings, division of tubers and raising from seeds, also the preparation of the soil, planting, staking, and the cutting of the flowers for home decoration. In conclusion, the lecturer drew attention to the various types, and also the positions Dahlias should occupy in the garden. Among the varieties recommended were Dazzler, Picture, Dazzle, Our Annie, Sweet, Lovely, Reginald Cory, Trixie and Gatton Star. An animated and lengthy discussion followed, in which many practical hints were submitted. At the close, a hearty vote of thanks was accorded to Mr. Fulker for his useful and interesting lecture.

The exhibits at this meeting made a magnificent show, there being nearly two hundred flowering plants staged. In the non-competitive section, Mr. F. Townsend, The Gardens, Hillside, staged a splendid display of Primula malacoides, representing five distinct types, while Mr. A. W. Gower, The Gardens, Calcot Grange, had an equally fine display of the type of this Primula called the Hillside strain. Both were awarded First Class Certificates. Mr. W. Broomfield, The Gardens, Cliffe House, Mapledurham, gained an Award of Merit for several fine plants of Cyclamen. In the class for six sticks of Rhubarb there were five entries, the first prize being won by Mr. A. H. Dow, The Gardens, Sulhamstead House; second, Mr. G. Clark, The Gardens, Dyson's Wood; and third, Mr. M. Goddard, The Gardens, Bear Wood. In the class for six heads of Seakale there was only one entry, by Mr. P. H. Reed, The Gardens, Erleigh Park, but his specimens were well worthy of the first prize.

PROFESSIONAL GARDENERS'.

There was a large attendance of members at the meeting of the Harrogate Branch of this Association at Belvedere, Harrogate, recently, when, under the chairmanship of Mr. J. T. McCormack, Mr. Linham, of Halifax, delivered a lecture on "Rock Gardens."

Mr. Linham proved himself an authority on his subject, for he dealt with the construction, choice of stone, the site, and associating surroundings, in a lucid and comprehensive manner, while his choice of plants for the rock garden, and instructions for planting them, proved that he was familiar with them.

The lecture was followed by an interesting discussion, after which, on the proposal of Mr. Mennell, the lecturer was accorded a hearty vote of thanks.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

It transpired during the evening, that there was a greater amount of sickness among the members of this Friendly Society than at any period in its existence and, no doubt, this was responsible for the small attendance at the sixty-third Annual General Meeting on March 11 last, at the New Horticultural Hall, Westminster. Mr. Charles H. Curtis presided over the meeting, which was composed chiefly of members of the Committee which had met earlier in the evening.

The affairs of both sections of the Society are in a very satisfactory condition, so that the Reports of the Committee were unanimously adopted, and there was room for very little discussion. During the year under review, ninety-three adults and one juvenile have joined the Private Section, and its total membership is now almost two thousand. While the calls for sick benefit have been very heavy, the accounts for the year show a substantial balance on the right side, and the Trustees have been able to add materially to their investments on behalf of the Society. In view of this gratifying state of affairs, the Committee has given serious consideration to the possibility of two new benefits to members, which are the continuance of sick benefit to members over seventy years of age, and funeral benefits to members on the death of the wife. If, as is confidently anticipated, the coming Quinquennial valuation shows that these additions are justified, they will be recommended so soon as possible.

The Report also records the loss the Society has sustained through the death of Mr. F. Uxtoby, who had been an enthusiastic member of Committee since 1915, and whose loss will be felt. Mr. F. Lavender, of Messrs. Carter and Co., was elected to fill the vacancy. As is so often necessary with other societies, the Committee conclude their Report with an appeal to members to pay their contributions promptly. When the penalties of lapse in this respect are remembered it is difficult to understand how any member can knowingly allow himself to become in arrear.

In the State Section, the condition of the Society is also satisfactory, although when its advantages over other societies are realised a much greater annual addition to membership might be expected. During the year, sixty-three new members have been enrolled.

The officers and retiring members of Committee were all re-elected, Mr. Sleet was added to the Committee, thanks were tendered to the treasurer, the trustees and the horticultural press, and the meeting closed with an unanimous expression of great appreciation of the services of the Chairman, who has served the Society in that capacity for twenty-eight years—surely a record in horticulture.

TRADE NOTES.

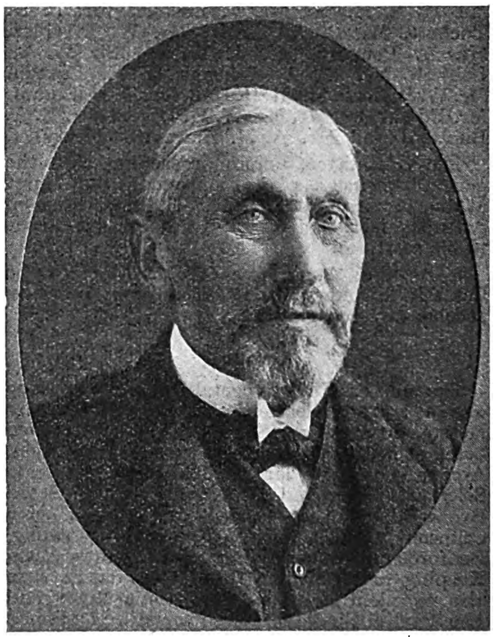
It is always a problem to keep pot plants perfectly healthy, and a notable contribution towards the solution of this problem is supplied by the makers of the Cret pot, which has a concave base, channelled to allow the water to run off easily and quickly, and is made with a very smooth surface inside, so that roots do not cling, and the risk of their breakage when re-potting is reduced to a minimum.

As lawn-mowers will soon be brought into action, the little booklet issued by Messrs. Alexander Shanks and Son, Ltd., comes opportunely as a reminder to purchase new parts for machines that have given long service, or obtain new lawn-mowers of up-to-date pattern. The firm offers hand, horse and motor-mowers, and the special triple, quintuple and septuple machines for use on golf-course fairways.

Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle*.

Obituary.

Peter C. M. Veitch, V.M.H.—It is with great regret that we record the death of Mr. P. C. M. Veitch, V.M.H., J.P., principal of the firm of Robert Veitch and Son which took place at his residence in Exeter on Saturday, March 9, at 3 a.m. Mr. Veitch was seventy-nine years of age, and had been ailing for some time, but the end came rather unexpectedly. He leaves one son, Mr. Norman Veitch, who is a Tobacco planter in northern Rhodesia, and three daughters, one of whom, Miss A. M. Veitch, B.A., is a director and actively engaged in the Exeter business. Of the two older sons, one, who was a judge in the Indian Civil Service, died in 1923; while the second, Major Leonard Veitch, was killed in action with the Devon Regiment in 1918. Mr. Peter Christian Massyn Veitch was born in South Africa in 1850, his mother being of Dutch-Huguenot descent; in fact Massyn was a corruption of her ancestors' name, Massena, one of Napoleon's generals. Mr. Veitch was the great grandson of the original founder of the house of Veitch, the records going back to 1792, about which time Mr. John Veitch came to Devon to make the park at Killerton for Sir Thomas Acland. The present firm of Robert Veitch and Son dates from 1863, and has been in Mr. Peter Veitch's hands since 1885, following the death of his father. Mr. Veitch entered his father's seed department at the age of sixteen, and spent the following fourteen years or so in various leading establishments in England and on the Continent. He also travelled extensively in Australia, Fiji, Borneo and the South Sea Islands on plant collecting missions. Some of his collections were lost at sea, he himself suffering shipwreck, but he sent a collection home in 1877, and in the same year he collected seeds of Ranunculus Lyalili (Mountain Lily) from Mt. Cook in New Zealand. From other parts of the same islands he collected several species of Celmisia, Veronica, Notospartium Carmichaeliae and other notable introductions which have found their way into private gardens all over the world. Mr. Peter Veitch was at this time collecting for his cousin, Mr. (afterwards Sir) Harry Veitch, of the Chelsea firm. It was at Coombe Wood Nurseries, under Ramsay, that Mr. P. Veitch developed a fondness for hardy flowering shrubs, which resulted in the Exeter nurseries becoming justly noted for the extensive collection cultivated there. The Victorian Medal of Honour was conferred upon him in 1916 in recognition of his great services to horticulture. Of a kindly, unassuming disposition, Mr. Veitch's death is a great loss to horticulture in general, and to the city of Exeter in particular. He was the senior magistrate for the city, and took a prominent part in the public life of both city and county. He was keenly interested in sport, being past President of the Rugby Club and President of the Cricket Club. He was a Governor of the Exeter Hospital, an enthusiastic member of the County Agricultural Society, County Agricultural Committee, and the Bath and West of England Society. He was also a frequent attendant at the Royal Horticultural Society's fortnightly meetings, being a member of the Fruit and Vegetable Committee. He was a past President of the Horticultural Trades Association, and quite recently took an active part in resuscitating the Devon and Exeter Horticultural Association, which is to hold an Autumn Flower and Fruit Show in November. A few introductions of note, raised by Mr. Veitch at Exeter, are as follow:—Calceolaria Golden Glory, C. Veitchii, Magnolia Veitchii, several hardy Nerines, Late Devonian Peach, and Exonian and Glory of Devon Peas, while he also introduced Rhododendron Dr. Stoker, Erica Veitchii and Veitch's Climbing French Bean to commerce. Miss A. M. Veitch has for some time past assisted her father in the business, thus carrying on the traditions of a famous family, which has had such a long and distinguished record in horticultural and botanical circles, and whose name is respected throughout the gardening world. Mr. Veitch was buried at Exeter on Wednesday, the service being held at St. David's Church, and attended by many old friends, and by representatives of all the public bodies of the city and county with which he was for so long connected.



THE LATE PETER C. M. VEITCH, V.M.H.

Edward Davidson.—On March 4, Mr. Edward Davidson, who for thirty years was Secretary and Treasurer of the Royal English Arboricultural Society, passed away at his home, the Estate Office, Hayden Bridge, Northumberland. Mr. Davidson, who was a magistrate for his county, was well known throughout the British Isles as a man well acquainted with matters pertaining to forestry. His father founded the Society fifty years ago, and it was he whom Mr. Edward Davidson succeeded as Secretary.

ANSWERS TO CORRESPONDENTS.

NAMES OF FRUITS.—*W. W. N.* 1, Broad-Eyed Pippin; 2, Welford Park Nonesuch; 3, White Nonpareil.

NAMES OF PLANTS.—*J. C.* Pittosporum tenuifolium, a variable species. *H. V. B.* Cyrtanthus Cooperi.

NECTARINE DIE-BACK.—*H. R. T.* The Nectarine shoots are suffering from die-back. Prune off and burn all badly infected shoots and spray the trees with Bordeaux mixture prior to the opening of the buds.

ORANGE LEAVES FALLING.—*W. W. N.* The trouble is certainly not due to a fungus. Only one further suggestion can be added to those offered previously (February 23, p. 151), and that is the leaf-fall may be due to faulty fumigation. Fumigation with hydrocyanic acid gas while the soil was excessively moist, may be responsible for the damage.

PEACH SHOT-HOLE FUNGUS.—*D. S.* The first spraying of your Peach trees with ammoniacal solution of copper carbonate, for the prevention of shot-hole fungus, should take place just as the leaves commence to expand, and should be followed by two or three applications at intervals of about a fortnight. The directions for mixing the solution are:—Mix one ounce of copper carbonate and five ounces of carbonate of ammonia together and dissolve it in about a quart of hot water. When thoroughly dissolved, add sixteen gallons of cold water.

RAISING ORCHIDS FROM SEEDS.—*V. S.* Practically all the well-known books on the culture of Orchids are out of print. It may be possible to obtain a second-hand copy of *The Culture and Management of Orchids* (Watson and Chapman); this deals with the raising of Orchids from seeds. The subject is, however, frequently referred to in these pages.

TOMATOS DISEASED.—*A.* Spray the plants at intervals from the seedling stage until the fruits are of fair size, with a liver-of-sulphur solution or weak Bordeaux mixture.

TULIPS AND IRISES DISEASED.—*R. B.* The Tulip and Iris bulbs are attacked by the fungus, Sclerotinia tuliparum. Infection arises underground and is due to the spread of mycelium arising from sclerotial bodies in the soil. The introduction of the fungus arises from sclerotia embedded beneath the bulb scales. Soil remains infected for three years after the removal of diseased bulbs. Contaminated potting soil should be subjected to steam sterilisation at 180° for three hours. The treatment of infected soil in outside borders with a two per cent. solution of formaldehyde is stated to be efficacious.

TULIPS FAILING.—In the first instance, your bulbs were not planted deep enough to obtain the best results, and it would also appear that the bulbs were of poor quality and immature. Lack of water might be partly responsible for their condition.

Communications Received—R. C. W.—A. G.—A. F.—W. O.—C. E.—A. J. T.—A. H. G.—W. A.—W. S.

THE
Gardeners' Chronicle

No. 2204.—SATURDAY, MARCH 23, 1929.

CONTENTS.

Agricultural scholarships 216
Alpine garden—
  Nertera depressa ... 220
  Saxifraga Guthrieana 220
  Sedum ternatum ... 220
Annuals, hardy ... 220
Book, notice of—
  Mesembryanthemum 230
Bulb garden—
  Crocus chrysanthus 228
  Crocus Sieberi ... 228
  Fritillaria latifolia... 228
Capsid bug, the common green 217
Chile and the Andes... 224
Chromosomes, concerning 215
Crinums, garden ... 222
Dahlia coronata ... 215
Eryngiums 222
Exhibition experiences: and the late Mr. John Cypher 231
Florists' flowers—
  Sweet Peas, intermediate 228
Frost in Sussex, effects of the great... ... 226
Fruit-growing, national importance of ... 232
Gladioli, South African 216
Hooper, Mr. Cecil H.... 216
Indoor plants—
  Aristea corymbosa... 222
  Bougainvillea Mrs. Butt 221
  Plumbago rosea ... 221
Mulching, moisture conservation by ... 228
Plant history in nomenclature 225
Plants injured by cold at La Mortola ... 226
Plants new or noteworthy—
  Fritillaria karadaghensis 221
  Rhododendron telopeum 221
Primula, the genus ... 230
Ranunculus gramineus 220
Societies—
  Birmingham and Midland Counties Gardeners' ... 233
  Cardiff Gardeners'... 233
  Glasgow and West of Scotland 233
  Guildford Gardeners' 233
  Professional Gardeners' 233
Sugar Beet seeds, treatment of to prevent seedling diseases ... 220
Trees and shrubs—
  Davidias from cuttings 227
  Erica carnea var. Winter Beauty ... 228
  Ivy, the management of 227
  Olearias 227
Vegetable garden—
  Asparagus 232
  Brussels Sprouts ... 232
Week's work, the ... 218

ILLUSTRATIONS.

Chile and the Andes 224,225
Crinum sp. from the Sudan 223
Cymbidium Ralph Sander, Old Quarry var. 219
Davidia Vilmoriniana, a rooted cutting of 227
Erica carnea var. Winter Beauty at Cheadle 229
Fritillaria karadaghensis... 221
Hooper, Mr. Cecil H. 216
Rhododendron telopeum 217

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 43·4°.

ACTUAL TEMPERATURE—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, March 20, 10 a.m. Bar. 30·3. Temp. 44°. Weather, Misty.

Concerning Chromosomes. MORE than a quarter-of-a-century has passed since de Vries startled the scientific world by the publication of his *Mutation Theory*. In two large volumes of German he gave an account of breeding experiments which he had been conducting with Evening Primroses for nearly twenty years previously, and outlined the conclusions of discontinuity in species-origin to which they led. These conceptions were one of the most important advances in evolutionary theory since Darwin, and everything that concerned the structure, history or behaviour of the North American genus Oenothera immediately became of prime importance. Cytological investigations of these forms began almost immediately, and in 1907 papers on the chromosomes of Oenothera commenced to appear. It was natural that investigators should scrutinise the germ cells of these plants and their sharply-marked derivatives or mutations, to see if any visible change had occurred there. By good fortune, Gates was able to announce that certain mutants had a different chromosome number from the parent (Oenothera Lamarckiana). A decade of work with which the names of Geerts, Gates, Lutz, Davis and other investigators were connected, led to the cell theory of mutation as developed by Gates in *The Mutation Factor in Evolution* (1915). Here it was recognised that each mutation represented a particular kind of nuclear change; in some mutants, such as O. lata, a single extra chromosome was present; in O. gigas the whole series had been doubled, and certain others, such as O. brevistylis and O. rubricalyx, were Mendelian mutations in which the visible chromosome morphology was unchanged and the inheritance in crosses was that of a simple Mendelian recessive or dominant. The occurrence of irregular divisions, by which an extra chromosome finds its way into a pollen grain which afterwards fertilises an egg and produces a plant such as O. lata or O. oblonga or O. scintillans, with fifteen chromosomes, was discovered as early as 1908. This process, by which one germ cell gets both members of a pair of chromosomes, is now called non-disjunction, and is known to occur in various plants and animals. De Vries and Gates[*] have recently published an account of all these (trisomic) forms. Since the genus Oenothera has seven pairs of chromosomes as its fundamental number, seven such primary trisomic types are to be expected, in each of which a different chromosome would be present in triplicate. They are O. cana, O. lata, O. liquida, O. pallescens, O. pulla, O. scintillans and O. spathulata, differing widely in their external characters, and gradually recognised over a period of years. In addition, there are three accessory trisomic mutants: O. albida, a weak form which appears in the offspring of O. lata, and O. oblonga and O. persicaria, both of which are derived in considerable numbers from O. scintillans. Similarly, it was shown in 1909 not only that O. gigas was a tetraploid mutation with twenty-eight chromosomes (4n), but that it was a cell giant. This was the starting point of the amazing results which have developed in the last twenty years, showing that polyploidy, or the occurrence of chromosomes in multiples of some basal number, is found with extraordinary frequency in the genera of flowering plants. It is known, for instance, in the species of Roses, Wheat, Oats, Docks, Chrysanthemums, Clovers, Maples and a long and constantly increasing list of other genera. Thus polyploidy is a principle which must be considered in connection with the evolution of the species in many genera of plants. Here is a most interesting form of discontinuity in the cell structure of related species—a frequent cause of partial or complete sterility when related species are crossed. The higher forms of polyploidy are frequently accompanied by apogamy and other aberrant forms of reproduction. Investigations with Oenothera have led to many other developments in genetic theory. The Oenotheras have notoriously been a law unto themselves and have shown more non-conformity to ordinary Mendelian behaviour than any other group of plants. It was at first supposed that O. Lamarckiana might be a garden hybrid, and that the peculiarities of its behaviour could thus be accounted for. But since wild species have been found to show the same sort of heterozygous conditions and to produce some of the same mutations, this view has had to be given up. In a recent monograph[†] all of the cytological investigations with this group of plants, in so far as they have a genetical bearing, have been summarised. From this it is seen that every part of the life cycle, including meiosis, pollen development, pollen tube growth, embryo sacs and their formation, ovules, fertilisation, embryo and seed production has been minutely scrutinised with significant results. Renner first showed that half the seeds in many species are empty or contain abortive embryos. This and other discoveries have led to the view that many species of Oenothera are permanently heterozygous or hybrid. Twenty years ago it was shown that the chromosomes of Oenothera are arranged end-to-end during meiosis, to form a continuous spireme or thread which then segments into a chain of fourteen chromosomes. More recently it has been found that delicate connections between these chromosomes persist into the reduction division. Instead of the pairs of chromosomes being free from each other, as is usually the case, one or more pairs remain connected, even after they are oriented preparatory to their separation. In other words, linkages persist between the chromosomes, and these linkages determine that the chromosome pairs will not undergo free assortment, as in ordinary Mendelian segregation, but that a restricted amount of assortment or no free assortment at all will occur, according to the number of chromosomes linked together. Several wild species are now known in which all the fourteen chromosomes remain linked in a single zigzag ring, alternate members of which pass to opposite poles. O. Lamarckiana and certain other species have one free pair and a ring of twelve, while in O. grandiflora all seven pairs are free. It is also found that the mutations show different linkages from the parent species. Thus the mutant O. rubrinervis has four free pairs and a ring of six. Again, in hybrids between species new fixed chromosome linkages are formed. These important recent discoveries, in which many investigators have taken part, open out new fields in the exploration of the relations between chromosomes, heredity, mutations and the evolution of species. A few indications of similar chromosome linkage have been found in other plants. Among the genetic peculiarities of Oenothera which require explanation are: (1) the fact that the species usually breed true (apart from mutations), although they are found on crossing to be heterozygous; (2) the fact that in many species half the seeds are empty and half the pollen and embryo sacs non-viable; (3) the fact that in crosses twin types commonly appear instead of free assortment of all the differences in the offspring. As already indicated, there is some evidence that the amount of segregation in crosses may be correlated with the number of free, unlinked chromosome pairs. To explain the origin of species such as O. Lamarckiana, which are a heterozygous combination of two types, both of which are non-viable in the homozygous condition, Professor Ruggles Gates formulates the hypothesis that pairing and linkage have taken place between non-homologous chromosomes in the hybrid. Thus, we would have the picture of wild species arising in Oenothera through hybridisation, and later breeding true because of the re-arrangement between chromosome pairs and the development of new linkages. Thus, the investigation of minute details of structure in the germplasm leads to new points of view regarding the evolution of species. Chromosome numbers are already a matter of practical concern to the horticulturist; chromosome linkages may become so in the future.

Dahlia coronata.—The Mexican Dahlia coronata, Hort., referred to in *The Gardeners' Chronicle* and other horticultural publications so far back as 1908, is very fully described in the current issue of the *Kew Bulletin* (No. 2, 1929). This species has pinnate leaves and orange-scarlet flowers. Originally, D. coronata was considered to be a form of D. coccinea,

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[*] Hugo de Vries and R. R. Gates, 1928. A Survey of the Cultures of Oenothera Lamarckiana at Lunteren. *Zeits. f. Abst. u. Vererb.* 47: 275-286, figs. 5.

[†] Gates, R. Ruggles, 1928. The Cytology of Oenothera. *Bibliographia Genetica*, Vol. 4, pp. 401-492, figs. 39. Martinus Nijhoff: 's. Gravenhage.

Cav., but although it is near the latter species, the authorities consider it deserves specific rank, and that the original horticultural name of D. coronata should be retained.

The North-east Coast Exhibition.—We learn that Mr. J. E. Grant White has been commissioned by the Empire Marketing Board to organise an exhibit of British horticulture at the North-east Coast Exhibition, to be held throughout the summer at Newcastle-on-Tyne. There is no charge for space at the exhibition, and the Empire Marketing Board is offering to plant and maintain exhibits if so desired. Many colonial visitors are expected at the exhibition, which should present an excellent opportunity for British nurserymen to display their wares and skill. Applications for space and for particulars should be addressed to Mr. J. E. G. White, 7, Victoria Street, London, S.W., at an early date.

Albury Downs, Surrey.—The Duke of Northumberland (Lord of the Manor of Albury, Surrey) has, by revocable deed, given the general public access to the portion of Albury Downs situated within the parish of Albury, an area of considerable extent adjoining Newlands Corner. A sub-section of the deed makes it a summary offence to take vehicles, including motor-cars, on to the Downs.

Activities of the Forestry Commission in the Grampians.—Some 12,000 acres of land have been acquired by the Forestry Commission in the Grampians. About 4,000 acres are considered suitable for afforestation purposes, and it is hoped that part of the area unsuitable for such purposes will be made available for public recreation and transferred to the National Trust.

Medal Awards of the American Peony Society.—During the past season, and as recorded in its recently issued *Bulletin* for December, 1928, the American Peony Society awarded Gold Medals during the past season to Mr. A. P. Saunders, Clinton, New York, in recognition of his success in hybridising Peony species; to Mrs. Edward Harding, Plainfield, New Jersey, for the work she has done to promote interest in the Peony by the publication of two splendid books devoted exclusively to the Peony; and to Indian Spring Farms, Baldwinsville, New York, for the best collection of Peonies, in not over one hundred varieties, exhibited at the Boston, Massachusetts, Show.

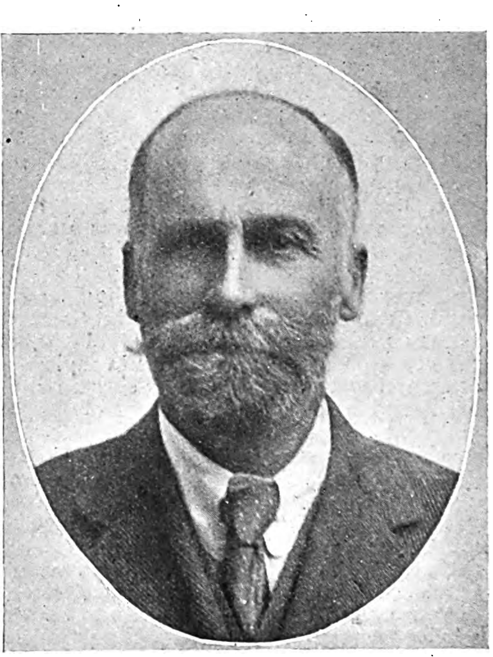
Portsmouth Horticultural Society's Summer Show.—The Summer Show of the Portsmouth Horticultural Society, to be held on Southsea Common on July 24, 25 and 26, should prove an event of outstanding interest, judging by the Schedule recently received. The five sections embrace, in all, nearly eighty classes, and, besides the many valuable money prizes, there are numerous trophies offered, including the Rowlands Cup, value fifty guineas, for the best non-competitive trade exhibit; the Lord Mayor of Portsmouth's Challenge Cup, for the best exhibit in Section 2; the *Evening News* Challenge Trophy, and several others.

Bush Fires near Adelaide.—Extensive bush fires occurred recently in the Adelaide Hills, to the east of Adelaide (Australia), and before the fires could be brought under control damage amounting to thousands of pounds was done. The fires raged on a fifty-mile front, and the destruction of orchards, pastures, fencing and stock is reported to be very heavy; one farmer alone had a thousand acres burnt.

Fifth International Congress Cambridge, 1930.—All motions for additional articles or amendments to the Rules adopted in 1905-10 must be in the hands of Dr. John Briquet, Conservatoire Botanique, Geneva, Switzerland, before September 30, 1929, if they are to come before the Congress of 1930, to be held at Cambridge, England. Such additions and amendments must be drafted as briefly as possible in Latin, English, French, German or Italian, and at least one hundred copies must be presented. According to the decisions of the Brussels Congress, 1910, only motions relating to new points which were not settled in 1905 and 1910 can be presented. Motions which do not answer to these conditions may only be discussed at Cambridge if the Congress so wishes.

Investigation of Weed Problems in U.S.A.—The annual losses from weeds in the United States of America are estimated at billions of dollars, and so vital is this problem that the Agricultural Service Department of the Chamber of Commerce has decided upon an extensive survey and study of the situation. The Service Department will co-operate with the American seed trade, and possibly with the U.S. Department of Agriculture and farm organisations. Seed law reforms will be considered, and weed conditions on farms, road-sides, etc., will be studied with a view to determining methods for weed eradication.

Mr. Cecil H. Hooper, F.L.S.—The reader of a recent paper before the Royal Society of Arts—which will appear in our next issue—Mr. C. H. Hooper, was educated at Marlborough College; Lycée de Versailles; and the Royal Agricultural College, Cirencester. He considers that the School Natural History Society at Marlborough created in him a great love of nature. He has read papers before the Royal Horticultural Society on: "A Year among the Orchards of Nova Scotia" (1899); "The Commoner Birds of our Gardens, their habits and foods" (1907); "The Influence of Geology on Horticulture" (1908); "Observations on the Blossoming of Fruits" (1910); and "The Pollenation and Setting of Fruit Blossoms" (1912). He is a member of the Scientific Committee of the R.H.S. and a Fellow of the Linnean Society. When the Horticultural College, Swanley, was commenced (1889), he taught surveying, geology and zoology. Later, he took Highlands Farm, Swanley, but continued to teach surveying for ten years. At Swanley he planted some sixty acres of different kinds of fruits; was secretary of an Experiments Committee which tried various manures and sprays on fruits and vegetables, and became secretary of the North-west Kent Fruit-growers and Market Gardeners' Association. Being asked to write a book on fruit farming, he wrote *Fruit Farming, Practical and Scientific*, which was published in 1912; the edition soon sold out, and a second edition was published in 1921. Mr. Hooper spent one year among the fruit farms of Nova Scotia, Canada, pruning, spraying and packing fruit; he also attended lectures at the School of Horticulture of the Nova Scotia Fruit Growers' Association; and brought back, and later imported, Canadian and American orchard spraying machinery (1898), which he believes to have been the first machinery for spraying high trees used in England. He also imported Bank's Red Gravenstein Apple trees, which grew well, but have since been re-grafted. In 1907, Mr. Hooper was appointed Librarian at the South-eastern Agricultural College, Wye, Kent. The Library is part of Wye College, built in 1445. His work there is considerable, interesting, and, he believes, useful. The College Easter vacation has afforded him opportunities for observation of, and experiments with, fruit blossoms, which he began in 1908. His object at first was to try to find out at which stage fruit blossoms were most susceptible to frost. In 1910 he had the advantage of assisting Mr. W. O. Backhouse in his pollenation trials on Apples, and recording his results at Wye. Several fruit growers have given Mr. Hooper the run of their farms, and carefully labelled the varieties for observation and experiment. Mr. W. S. Erle-Drax has also kindly allowed experiments in his beautiful fruit garden at Olantigh, Wye, where his gardener, Mr. Bond, grows fruits so well, and where a large number of the best varieties of fruits are grown. In 1928, Mr. E. A. Bunyard allowed Mr. Hooper the use of the Allington Nurseries for recording the order of flowering of varieties and pollenation experiments.


MR. CECIL H. HOOPER, F.L.S.

Legacies to Gardeners.—The late Miss Charlotte Maria Boyd, of Home Leigh, Cogham, who died on February 6, 1929, left £200 to her gardener, Mr. Alfred Sherlock.—The late Mrs. Mary Abb Parker, of Broomfields, Wilmington, Kent, who died on December 30, 1928, left £50 to her gardener, Mr. Arthur Mott.

Agricultural Scholarships.—The Ministry of Agriculture and Fisheries is offering 130 scholarships for courses at farm institutes, agricultural colleges, veterinary colleges and universities, for the sons and daughters of agricultural workmen and other persons engaged in agricultural work who are in a similar economic position. The scholarships enable young agricultural workers to improve their technical knowledge, so that in later life they may have a better chance of making headway in the industry on which their livelihood depends. Since the commencement of the scholarship scheme in 1922, 841 men and women have been assisted, and the results of training are encouraging. A large number have succeeded in improving their positions, the posts ranging on the practical side from foreman to estate manager, and on the educational side from assistant instructor to government inspector. The selection of candidates is by interview; no written examination is required. Practical experience in agricultural work is a very desirable preliminary to the courses of instruction—except scholars proceeding to universities direct from secondary schools—and, other things being equal, preference is given to applicants who have a good knowledge of ordinary farm work, or dairying, horticulture, or poultry-keeping, as the case may be. The value of the scholarships is sufficient to enable the recipients to attend the various institutions, without cost to themselves or to their parents. Information about the scheme, including a leaflet outlining the careers open to scholars, and forms of application, may be obtained from the Secretary, Ministry of Agriculture and Fisheries, 10, Whitehall Place, S.W.1, or locally from the offices of county councils. The last date for receiving applications is April 30, 1929.

A Gift to Cowes, Isle of Wight.—The Cowes Urban District Council has accepted the generous offer from Mr. Herbert J. Ward, of Egypt House, Cowes, of Northwood House and land in its vicinity, comprising some twenty-six acres. It is proposed to convert the house, which was built in 1838 and during the war was used as a Red Cross Hospital, into a town hall and municipal offices, with rooms for public entertainments, etc., and the land will be laid out as a public pleasure ground, for which it is admirably adapted as it is accessible from all parts of the town. Mr. Herbert Ward is a grandson of Dr. W. G. Ward, who gave Cowes its recreation ground many years ago.

South African Gladioli. — An interesting account of the South African Gladioli is given by Mrs. L. Bolus in the *Journal* of the Botanical Society of South Africa (Part XIV, 1928), and accompanying the article are coloured illustrations of Gladiolus crassifolius, G. Stanfordiae, G. gracilis, G. Pageae, G. coccineus, and an unnamed species, with pale rose-tinted, violet flowers, one specimen of which was collected in April, 1918, by Mr. N. S. Pillans on the Cape Flats, near Paarde Vlei, but it has not been seen since. Up to the present, some one-hundred-and-thirty Gladiolus species have been identified in South Africa, and it would appear there are many more to be discovered yet; these Gladioli may be divided into two important sub-divisions, *i.e.*, those with typical sword-shaped leaves, and those having narrow, grass-like foliage. Various distinctive characters of some of the species are discussed, and the order of flowering of the popular species is given. The New Year is heralded in the mountains by the Christmas Painted Ladies (G. Pappei), which are followed by the Autumn Painted Ladies (G. tabularis), in February. The succession is carried on from the end of March to early May on the lower slopes by the Little Pink Papies (G. brevifolius),and these are followed by the Brown Afrikanders (G. maculatus), which bloom throughout June. In July there are the Little Blue Papie (G. gracilis), Blue Vlei Papie (G. biflorus), Small Brown Afrikander (G. tenellus), Gold Papie (G. aureus), Pink Papie (G. villosus), Blue Afrikander (G. recurvus), Painted Lady (G. debilis), Kalkoentjes (G. alatus) Pink Bell (G. inflatus), and Aandblom or Large Brown Afrikander (G. grandis). The most beautiful of all follows these, namely, the Broad-leaved Painted Lady (G. blandus), which brightens the mountain slopes, while on the flats flowers the quaint, sand-loving G. arenarius. Mrs. Bolus's contribution to the literature of the Gladiolus makes interesting reading throughout, while, from a technical point of view it is also of considerable value.

The Common Green Capsid Bug.—This insect pest (Lygus pabulinus) is widespread throughout this country, being found on a large number of wild and cultivated plants, both herbaceous and woody. A full account of its life history, together with a description of the damage it does and suggestions for control, are given in the March issue of the *Journal* of the Ministry of Agriculture (Vol: XXV), by Mr. F. R. Petherbridge, of the School of Agriculture, Cambridge. Currants, both Red and Black, Gooseberries, Apples, Pears, Plums, Cherries, Peaches, Raspberries and Strawberries are attacked by this Capsid, together with Potatos, Beans—Runner, Dwarf and Broad—and Roses, while in the hedgerows, beside the herbaceous plants, it can chiefly be found on Blackberries and wild Roses, but it also attacks Hawthorn, Privet, Ash, Elm and Sycamore. In the herbaceous border its presence may often be detected on Dahlias, Salvia splendens, Fuchsias, Chrysanthemums, Marigolds, Michaelmas Daisies and Poppies, the foliage of Dahlias and the Salvia often being seriously disfigured. Among weeds it attacks are the various Bindweeds, the Creeping Buttercup, White and Red Dead Nettle, Polygonums, Docks, Groundsel, Solanums, Sow Thistle, Dandelions and Stinging Nettle; Chickweed, Shepherd's Purse and Veronicas are not attacked. There are two generations of this Capsid per annum. Eggs are laid on woody plants in the autumn, migration usually taking place in spring to herbaceous plants, upon which the summer eggs are laid, the second generation returning to the woody hosts for the laying of winter eggs. Mr. Petherbridge states that the Common Green Capsid Bug is readily killed by contact washes, as is the Apple Capsid Bug, but it is difficult to reach the bugs with the wash. They fall quickly to the ground when disturbed, and as Currant bushes are usually very leafy, spraying them often gives poor results. The best method is to shake the bushes and then spray the ground beneath them very thoroughly. The spraying should be done after all the bugs have hatched, about the time when the petals of Bramley's Seedling Apple begin to fall. The best wash to use at present is of eight ounces of nicotine to one hundred gallons of water, together with a spreader, which may be soft soap where the water is soft or of ordinary nature, at the rate of 8 lbs. to 10 lbs. per one hundred gallons of water; or sodium caseinate or a similar material where the water is very hard. The spray should be applied with a high-pressure pump, through a coarse nozzle. Spraying for the second generation is not considered profitable. In the case of Apples, the trees and the ground beneath should be sprayed immediately after blossoming. In small gardens an economical way of dealing with the bugs is to shake them off the plants on to sacking or sticky trays, and destroy them.

Appointments for the Ensuing Week.—Monday, March 25: Birmingham and Midlands Gardeners' Association's lecture. Tuesday, March 26: Royal Horticultural Society's Committees meet; Royal West Renfrewshire Horticultural Society's meeting (two days). Wednesday, March 27: Newcastle and District Horticultural Society's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Khasia Orchids.*—Dr. Hooker, in his travels in the Khasia mountains, mentions Eria, Coelogyne (Wallichii, maculata and elata), Cymbidium, Dendrobium, Sunipia and other beautiful air plants, as growing at the top of the Kolleng rock, flowering profusely; and though freely exposed to the sun and wind, dews and frosts, rains and droughts, they were all fresh, bright green and strong, under very different treatment from that which they are exposed to in the damp, unhealthy, steamy Orchid houses of our English gardens. Vol. II, 294. "Vanda caerulea grows in profusion, waving its panicles of azure flowers in the wind. As this beautiful Orchid is at present attracting great attention, from its high price, beauty and difficulty of culture, I shall point out how totally at variance with its native habits is the cultivation thought necessary for it in England.* The dry grassy hills which it inhabits are elevated 3,000 to 4,000 feet; the trees are small, gnarled, and very sparingly leafy, so that the Vanda which grows on their limbs is fully exposed to sun, rain and wind. There is no moss or lichen on the branches with the Vanda, whose roots sprawl over the rough bark. The atmosphere is, on the whole, humid, and extremely so during the rains; but there is no damp heat or stagnation of the air, and at the flowering season the temperature ranges between 60° and 80°; there is much sunshine, and both air and bark are dry during the day; in July and August, during the rains the temperature is a little higher than above, but in winter it falls much lower, and hoar frost forms on the ground. Now this winter's cold, summer's heat, and autumn's drought, and above all, the constant free exposure to fresh air and the winds of heaven, are what, of all things, we avoid exposing our Orchids to in England. It is under these conditions, however, that all the finer Indian Orchideae grow, of which we found Dendrobium Farmeri, Dalhousianum, Devonianum, etc., with Vanda caerulea; whilst the most beautiful species of Coelogyne, Cymbidium, Bulbophyllum and Cypripedium inhabit cool climates, at elevations above 4,000 feet in Khasia, and as high as 6,000 to 7,000 in Sikkim." *Dodman.*

* We collected seven men's loads of this superb plant for the Royal Gardens, at Kew, but owing to unavoidable accidents and difficulties, few specimens reached England alive. A gentleman who sent his gardener with us to be shown the locality was more successful; he sent one man's load to England on commission, and though it arrived in a very poor state, it sold for £300, the individual plants fetching prices varying from £3 to £10. Had all arrived alive, they would have cleared £1,000. An active collector, with the facilities I possess, might easily clear from £2,000 to £3,000, in one season, by the sale of Khasia Orchids. *Gard. Chron., March* 25, 1854.

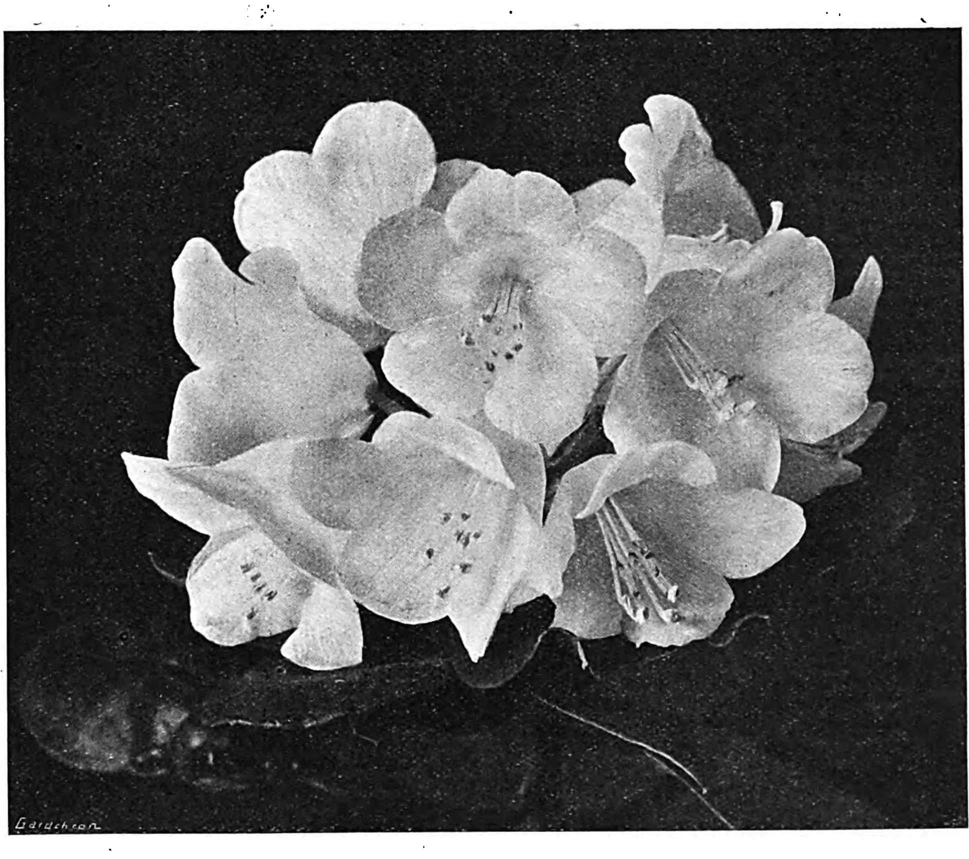


FIG. 105.—RHODODENDRON TELOPEUM.
(see p. 221).

Publications Received.—*Symbolae Sindicae.* Bot. Ergebnisse der Expedition der Akademie der Wissenschaften in Wien nach Südwest-China 1914-18; edited by Heinrich Handel-Mazzetti; in seven parts; parts IV and VI now ready; Vienna, Julius Springer, Schottengasse 4; price, part IV, RM. 28·80; part VI, RM. 10·00.—*The Crab-Apples and Nectarines of Japan*, by Yoshichi Asami, pp. 89, with 44 full-page illustrations and 50 plates; Marquis Nabeshima, Tokyo.—*Every Day in My Garden*, by F. Hadfield Farthing, F.R.H.S., pp. 414; Alfred A. Knopf, London; price 7s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Semi-deciduous Dendrobiums.—These free-flowering Orchids are making a fine display of bloom, and when fully expanded, the flowers will keep perfect for a long period if the plants are placed in cooler and drier quarters. Specimens in flower are attractive subjects for conservatory decoration, and will suffer no ill effects if used for house decoration for short periods, provided the plants are not exposed to cold draughts, and are only afforded sufficient water at the roots to keep the flowers and bulbs rigid; saturation of the roots will cause them to decay in the lower temperature. It is not advisable to place the plants in a high temperature directly after being in use for house decoration, but later, when the flower spikes have been removed, they should be grown in the warm house and lightly syringed on bright days, the surroundings being kept fairly moist. New growths will soon be produced, and when these are a few inches high and fresh roots are being formed, any necessary repotting may be attended to, using well-drained pots or pans. As Dendrobiums do not require a large amount of compost to grow in, the receptacles should be on the small side and the drainage ample; they root well in a mixture of three parts Osmunda or coarse A.1. fibre, and one part Sphagnum-moss, adding crushed crocks to keep it porous. The compost should be pressed firmly among the roots to allow the water to pass through freely; if it is left in a loose state, the fibre acts like a sponge and retains too much water; both the roots and compost quickly deteriorate under such conditions. After repotting, the stems should be supported by a neat stake and water afforded very sparingly until the roots are well established, when increased quantities may be given each time the compost appears dry. As the sunlight increases, more atmospheric moisture should be afforded by frequently damping the floors and syringing the pots and surroundings. Only light shading from very hot sunshine will be needed, and a free circulation of air should be provided so as to maintain a buoyant atmosphere, but cold draughts should be avoided.

Temperatures.—The increased amount of sunshine will cause the temperature to rise in all divisions during the day, to the benefit of most of the plants. A little extra damping down will be required on bright days, but any excess of heat and moisture should be avoided so that the plants will not be forced into growth unduly. Ventilation and shading should receive careful attention to avoid great fluctuations of temperatures. At this season, if it is necessary to lower the blinds to prevent injury to the foliage, it is advisable to close the ventilators for a time and so avoid a drastic fall in temperature. Large fires should not be made up in the early morning, as they are difficult to control during the rapid changes of weather generally experienced at this season.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Cucumbers.—The time has now arrived when Cucumber plants which have been in bearing all the winter may be removed, the houses cleansed, all old bottom-heat material removed and a clean start made with fresh young plants. If the weather is anything like seasonable, we may expect a few hours' sunshine daily to help all plants forward. The houses should be shut early, and plenty of water, at a temperature of 80° to 90°, syringed over the walls and other surfaces, will produce conditions most favourable to rapid progress. As Cucumbers delight in heat, a bottom-heat temperature of 75° to 80° should be maintained, while the day temperature of the house should be about 80°, rising to 85° to 90° after closing. Some growers never admit air, but I prefer to afford a little, if only for half an hour at midday, when the temperature may be maintained at fully 80°, but at this early season ventilation is a most troublesome business, especially in high, exposed situations. Where spring-sown Cucumber plants were given a good start they will now be making rapid progress, and must be kept steadily supplied with fresh rooting material, consisting of light turf, lime rubble or charcoal as the young roots come through. A stout, but by no means gross, growth is best calculated to give lasting results. Feeding in the early stages should be avoided, but once the plants commence bearing, mild and warm liquid manure may be given alternately with pure water, and also used for damping purposes. If the lateral growths have been pinched at the first leaf and early fruits are in demand, the second breaks may be allowed to retain their fruits until the most promising can be selected for developing, when the others, and those with male flowers, should be removed. As growth proceeds, remove all superfluous shoots and pinch back those bearing fruits at the first joint beyond if space is limited, but thin planting and semi-extension training is not only the most profitable, but is the most simple mode of growing Cucumbers.

Early Figs.—So soon as the fruits upon early pot Fig trees have completed the first swelling, progress for three or four weeks will be imperceptible, but if the roots are right, good work will be going on. In dealing with these tantalising fruits, the grower need not trouble about fertilisation, but the first step to success is liberal thinning. Maintain a night temperature of about 60°, with an average day temperature of 70° from fire-heat, and fully 80° on bright days with air and plenty of atmospheric moisture. Where bottom-heat is kept steady at 70° to 75°, forcing is safer and easier, and more rapid progress is made; an extra 5° will do no harm through the night, with 95° after closing the house early, when a good syringing with tepid water should be given. Give plenty of rich top-dressings of a mixture of rough pieces of turf, bone-meal and decayed manure, not packed too tightly.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Seed-sowing.—A large number of alpine plants may be raised successfully from seeds, and in collections of any size it is desirable to raise a number of the rare or new kinds by such means each year. A five-inch pot will usually be found large enough to provide sufficient stock. Cold frames which have a deep bed of ashes to prevent worms working their way into the pots, will be found most suitable for raising these hardy plants. Seeds of many of them are so minute that it is advisable to water the soil by plunging and allow it to drain before sowing the seeds. It is unnecessary and inadvisable to cover many of these small seeds with soil; the merest dusting of sand is sufficient. After sowing the seeds, place a sheet of glass over each pot and cover with paper until germination has taken place. Give attention to shading by mats during bright sunshine, for thousands of tiny seedlings are lost each year through being exposed to the bright sunshine and drying winds for a few hours. The seeds of these subjects often germinate irregularly, and it is a common practice to discard them after a few months on the supposition that they have failed, yet they may be perfectly sound. All that is necessary to do with such is to place them in the open, preferably at the base of a north wall, and provide them with water during summer, leaving them to get all the frost and snow possible in winter, and placing them in frames again the following spring. Seeds of many bedding plants may be sown during this week; larger sowings will be required this year to make up for the losses caused by the frost. Do not attempt to germinate them in too high a temperature; it is better to sow them a week or two earlier in a low temperature and give them cool treatment, than to force them into growth.

Climbers and Shrubs on Walls.—Now that the likelihood of hard frost is past, plants on walls should be attended to and the necessary pruning and tying-in done. A considerable amount of loss from the recent hard frost seems to be general, especially where tender plants have been grown in the open. Where dead plants have to be replaced, take the opportunity of thoroughly preparing the sites by enriching or replacing the old soil with fresh compost. This is especially necessary where narrow borders exist at the base of walls.

Sweet Williams.—These may now be planted where they are to flower. The best of the self-coloured varieties are Pink Beauty and Scarlet Beauty, but the old-fashioned Auricula-eyed sorts have much to recommend them if good strains are grown.

Pelargoniums.—Cuttings of Pelargoniums which are rooted should be potted into three-inch pots, and, in the south, may be placed in a cold frame during this month.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Grafting.—The grafting of fruit trees is one of the most ancient and important methods of preserving and increasing varieties, as well as of facilitating bearing. The methods of grafting are various, but for the purpose of these notes only two will be mentioned, viz., whip and tongue grafting and crown grafting. The actual time for carrying out this work is governed by the locality, but it is best done when the buds on adjacent trees are seen to be swelling freely. Success in grafting depends on having the sap moving freely in the stock, and dormant in the scion at the moment of insertion. These grafts or scions, whether they be from Apple, Pear or Plum, should be taken from trees of good quality and fruitfulness. They should be of the previous year's wood, well-ripened, and well furnished with growth buds, which may be recognised easily by being long and pointed, as distinct from the fruit buds, which are short and plump.

Whip and Tongue Grafting.—It is assumed in the case of young stocks that they were planted some twelve months before, and are therefore, well rooted and sufficiently established for working. The first operation is to cut back these stocks to about six inches from the ground level. Then, with a keen-edged pruning knife, make a long, upward, oblique cut from about three inches above the soil. Across the middle of this cut surface, cut a slit almost parallel with the slope, by a downward movement of the knife, thus forming the tongue. Next select the scion, with three or four buds, and make a similar slanting cut downwards, so nearly as possible the same length as that on the stock. Trim it carefully, if necessary, to form a perfect fit. Across the middle of this cut surface make an upward cut to form the tongue. The scion is now ready for insertion. Open the two tongues slightly and slip the one behind the other and push down gently so that they interlock. It is of the utmost importance that the bark or cambium layer of the stock should meet that of the scion on one side at least. Where the stock and scion are of equal dimensions success is almost assured, as the bark on both sides will meet and form a union; but it so often happens that the stock is much larger than the scion. Then it becomes imperative that the bark on one side of the stock and scion should be brought closely together to form a union. Bind the stock and scion firmly together with good, broad bast or raffia, covering all the cut surfaces with grafting wax, or prepared clay. Grafting wax, which is applied with a brush, should be sufficient to make the joint air-tight.

Crown Grafting.—Bush and old standard trees which have become unfruitful may be rejuvenated by "top-grafting," provided the roots and stems are in a healthy condition. In this way new and desirable varieties may be speedily increased. Such old trees should now be headed back, *i.e.*, the branches are cut back to eighteen inches or so from the main stem, and when the sap is well on the flow, later on, these branches may be shortened a little further still, the cut surfaces pared smoothly over, and "crown grafted." The scions are made as for whip and tongue grafting, but without the tongue. Make a cut three inches long in the bark of the cut-over branches, and push the wedge-shaped scion down between the wood and the bark until the cut portion on the scion has disappeared. Two scions on each branch will be quite sufficient. Bind the grafts in firmly with raffia, and wax over thoroughly to prevent damp and fungus disease getting into the cut surface.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Calceolarias.—Calceolaria Clibranii is a graceful plant for grouping, and to obtain the best results with it the specimens should be fed liberally with liquid manure, or failing this, a concentrated manure recommended for pot plants. The plants will now be producing their flower stems and will need supporting with neat stakes. Hybrid Calceolarias should not be allowed to become starved in their pots before liquid manure, which may be given on alternate waterings, is used. Late-sown plants may now be placed in their flowering pots and grown under the coolest conditions possible.

Carnations.—Cuttings of Perpetual-flowering Carnations which were rooted during January and potted singly into small pots, should now be ready for transference to three-inch pots. While it is essential that the young plants should not become pot-bound, it is wise to guard against overpotting. Mellow, fibrous loam that has been stacked for at least six months should form the bulk of the compost, and to this may be added one part manure from a spent Mushroom-bed, a little bone-meal, sharp, coarse sand, old mortar rubble and wood ash. The whole should be rubbed through a coarse sieve to ensure that it is thoroughly mixed, and then warmed to the temperature of the house in which the plants are growing. One crock placed at the bottom of the receptacle should suffice at this potting, and this should be covered with a little loam fibre. Pot the plants moderately firmly, pressing the compost with the fingers only, and leave the surface soil loose so that water will pass through evenly. Guard against potting the plants too deeply; only just cover the old ball of roots with the new soil, as deep potting often results in stem-rot. Before potting them, it is wise to go carefully over the young plants and ensure that the soil in which the plants are growing is well moistened, so that no water will be required directly after they have been potted. Stand the young plants, if possible, on a cool layer of ashes in a light house with a night temperature of about 50° to 55°. The first stopping of these Carnations should only be performed when free root action is taking place; therefore it is best carried out two or three weeks before or after this potting. The best time for the first stopping is when the young plants are growing freely and the roots have completely penetrated the soil. On the other hand, if the growths are allowed to become hard before stopping takes place, a disappointing break will result.

Browallias.—Seeds of Browallia speciosa var. major and B. elata and its variety alba, may now be sown. The Browallias are useful subjects for the conservatory as they bloom when flowers are none too plentiful. B. speciosa var. major grows best in an intermediate house, but the plants may be removed to a cool house when in flower.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Spring Cabbage.—Now that the weather is milder, the spring Cabbage bed may receive a dressing of sulphate of ammonia or nitrate of soda applied between the rows of plants and then hoed in. If there is a large area of these Cabbages half the bed, or a quarter, can be done at a time, at an interval of a fortnight, so that the Cabbages will be ready for cutting in succession. Cabbage plants which were wintered in the seed-bed may now be planted out to provide a succession.

Early Carrots.—A further sowing of Carrots may be made on a warm border, in ground that has been well dug and exposed to the recent frosts, and which, before sowing the seeds, should be worked with a cultivator to secure a fine tilth. Early Scarlet Horn and Early Nantes are two suitable varieties for sowing at the present time.

Potatos.—Another batch of early Potatos should be planted in well-prepared ground. Allow about twenty-four inches between the rows and draw the drills six inches deep. After the tubers have been set, and before they are covered, sifted wood-ash should be sprinkled in the drills, this being beneficial to Potatos. To produce exhibition tubers, choose only the very best sets, and if plenty of old, spent Mushroom-bed manure is available, work this well into the soil previous to planting the tubers. Keep the ground scrupulously clean by frequent hoeing, and exercise care when earthing up.

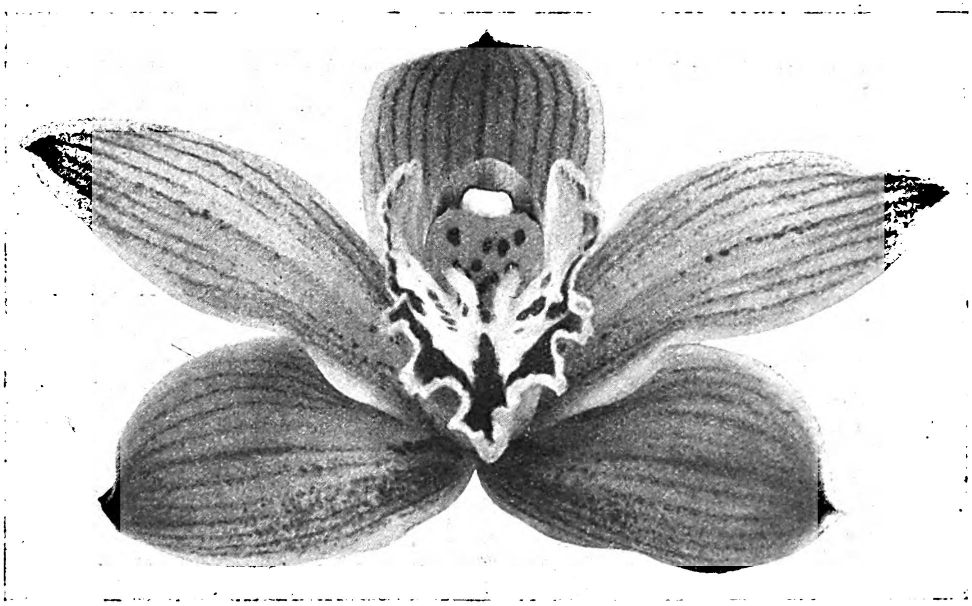


FIG. 106.—CYMBIDIUM RALPH SANDER, OLD QUARRY VAR.

R.H.S. Award of Merit, March 12. Flowers bronze, buff and pink. Shown by W. J. Burstow, Esq., Old Quarry, Haywards Heath (see p. 212).

Beetroot.—A sowing of stump-rooted Beet may now be made for early use. This crop should be sown on the warmest border in the garden, preferably on ground where it is walled in, as a walled-in garden is much warmer, and things grow more quickly with the shelter provided. Any Beetroots left in the ground should now be pulled and stored in ashes; they will keep for a considerable time.

Spinach Beet.—This vegetable has wintered well and is now commencing to grow. The Dutch hoe should be applied between the lines to open the surface. Likewise, Seakale Beet should be treated in the same manner. These vegetables are in great demand as a change from other green vegetables.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

Early Potatos.—Where a suitable warm border can be made use of, a few rows of proved early Potatos should now be planted, provided steps are taken later to protect the young growths from late frosts. On heavy or wet soils plant the tubers rather shallowly and allow an extra inch or two between the rows to admit of earthing up. If used, artificial manures should be applied sparingly, but lime (air-slaked) and burnt soil or wood ashes are of great benefit.

Seakale.—Where grown from root-cuttings, this crop should be attended to at an early date. The cuttings which were removed from the forcing crowns at lifting time and prepared should now be calloused. If the plot has been dug or trenched previously, a good forking or hoeing will suffice now. Mark off the rows two feet apart, and make holes with a dibber just deep enough to allow of the crown of the cutting being covered. Drop one cutting into each hole, twelve to fifteen inches apart, and fill with sharp sand, quite covering the crown. A row or two of Seakale seeds should be sown each alternate year to supply fresh stock, as deterioration takes place if Seakale is grown too long on the same ground. Lilywhite is the best variety, but it is not quite so hardy as the common sort. When growth commences, keep the soil well cultivated on the surface, and if a plurality of crowns occurs, reduce to one when large enough to handle.

Montbretias.—The newer, improved varieties of these which were lifted and wintered in frames may now be replanted in the flowering quarters. They do not seem to be particular as to soil, doing well in most well-cultivated ground. Plant single corms from four to six inches apart, in rows twelve inches from each other. If the soil is very heavy, a little rough sand should be placed around the roots, and the whole bed well broken up previous to, or during the planting.

Gladioli.—Large-flowered, and also Primulinus or other Gladioli, should be planted in good, well-wrought ground. Light soil is to be preferred for Gladioli but heavy ground can be made to suit by the addition of sand, burnt soil, and vegetable or leaf-mould, mixed in with the fork or spade, and a little sand both above and below each corm at planting. It is a mistake to start Gladioli corms in pots or boxes under glass and to plant them out later; they do much better if planted permanently while dormant.

ALPINE GARDEN.

SAXIFRAGA GUTHRIEANA.

There are two forms of the rarely-grown Saxifraga Guthrieana, and one, in particular, S. Guthrieana var. variegata, appears to be practically out of commerce; at least, the writer has not seen it offered for some time. The typical S. Guthrieana is reputed to be one of the numerous hybrid Saxifrages, and to have derived its origin from the union of the hybrid S. Andrewsii with S. Aizoon. There is, possibly, no precise evidence of this, but it is quite probable, as we may gather from an observation of the green-leaved form. It resembles a plant of S. Andrewsii which has been stunted and reduced in size by unfavourable conditions. It has lost nothing, however, in the way of neatness, and is superior to S. Andrewsii in that respect. The pinkish flowers also resemble those of S. Andrewsii.

The main interest in this Saxifrage lies in its having produced a variegated-leaved form, which is of high beauty and much superior in every way to S. umbrosa var. variegata, the nearest approach we have to it in respect of variegation in Saxifrages. It is a really exquisite plant with its foliage wonderfully marked with pink, white and yellow, but it does not produce its flowers quite so freely as the green-leaved form.

S. Guthrieana and its variegated variety will grow in ordinary loam, and they are, I consider, the better for a little shade. The variegated form is not a vigorous grower by any means, and the suggestion made by an eminent writer on such plants that it should be grown in the alpine house is worthy of consideration. In the open I have had to protect it against birds, which appear to delight in tearing out the rosettes and leaving them lying on the path. It is a lovely plant which I have lost from this cause when absent from home for a week or two, only returning to discover, on several occasions, S. G. var. variegata withered beyond all hope of recovery. *S. A.*

SEDUM TERNATUM.

Although one of the best Sedums in cultivation, S. ternatum is not often well represented in gardens. The only explanation one can offer for this is that it is a species which does not flourish in the meagre, dry, sun-beaten soils which the Stonecrops are popularly supposed to enjoy. I find it needs rather moister conditions, with a fairly good, yet gritty and well-drained, root-run, and if the plants are not too much exposed, so much the better. With such treatment, S. ternatum can be most delightful, covering itself with a mass of foamy inflorescences throughout the later spring and early summer.

S. ternatum is a North American species, haunting rocky, open woods over a large range east of the Mississippi. Its leaves are roundly obovate, tapering to the base; they are usually in threes (hence the specific name), and those of the barren shoots, which latter form a loose rosette, are about half-an-inch wide, and very much larger than those on the flowering stems. This foliage is fleshy, glabrous, and a pale glaucous-green. Being evergreen, the rosettes of S. ternatum are attractive even in winter and the plant is perfectly hardy. The flowers, which are white, are borne in a claw-like cyme with three or four branches and they produce, as I have suggested, a pretty, scintillating mass of whiteness which endures over a period of several weeks.

This Sedum is quite distinct from most of its race, and so remarkably constant is it in character that no varieties appear to be in cultivation—not in commerce, at any rate. The only species which is likely to be mistaken for it is S. Nevii, which is, however, smaller in all its parts and more glaucous in the colour of the foliage; the leaves of the much closer rosettes are also more spathulate than those of the above, especially on the flowering stems, where they are almost oblong. S. Nevii appears to be closely allied to S. ternatum, and it needs similar conditions.

NERTERA DEPRESSA.

This little plant seems to be one of those things which are quite easy in the right place, and absolutely hopeless in the wrong one. Perhaps this is why it exerts such a strange fascination over most amateurs. But quite apart from that wayward temperament which so excites our gambling instincts, N. depressa is a charming plant. When its glossy, bright green carpet, which looks like a film of Helxine Solierolii, is dappled all over with its highly-polished and tawny, orange-scarlet fruits, which are as large as small Peas, it is exceedingly attractive. This crop, moreover, lasts for an extraordinary period. Last year, for example, some patches of N. depressa coloured their glowing berries in early August, and the plants were still carrying most of them in January of this year.

N. depressa is a New Zealand species and, if it is not perfectly hardy, it seems capable of enduring considerable frost. Some of my plants which were quite in the open came through last winter with very little injury, but some shelter is desirable in most places if the best results are to be realised. The specimens referred to are under a shelving rock with a northerly exposure. The soil is light but cool and damp, just the sort of place in which Liverwort loves to grow. Indeed, this pest is the only trouble which assails these particular plants, but an occasional picking-out of the enemy is sufficient to keep it from overwhelming the Nertera. The New Zealand Moss, as N. depressa is sometimes labelled when displayed in pots in shop windows, makes an attractive subject for partly shady places in a cool house, especially among Ferns. It is easily propagated by division, any rooted scraps growing freely if potted in sandy leaf-mould in the later summer, the pots being kept in a shady, closed frame for a week or so. *A. T. J.*

RANUNCULUS GRAMINEUS.

The merits of this Buttercup are quite rightly extolled by your contributor, *Kent*, in a recent issue of *The Gardeners' Chronicle* (March 2, p. 158), for although it is a yellow-flowering species of Ranunculus, it is quite distinct in petal from that of the ordinary type of yellow Buttercup. This is due to a feature which, when recognised, may make the plant more interesting to those who grow it. The upper surface of the petal is without the high polish which is such a distinctive feature of the common yellow Buttercup. Hence the epithet, "glossy," used by *Kent* in describing the flower is not exactly apt. The upper surface—the one exposed to view—of the petal of Ranunculus gramineus has a soft, refined texture, in contrast to the very shiny and somewhat aggressive character of that of the Buttercups of our pastures.

The texture assumed by the part of the petal exposed to view—usually the upper (ventral) surface—is one of considerable interest in floral evolution. Apparently the tendency is to advance from a smooth, somewhat shiny surface to a soft, velvety one. This is brought about by the epidermal cells becoming papillate. The highly-glazed petal of the yellow Buttercup would appear, on the other hand, to be an evolutionary advancement on its own. Instead of what might be termed primitive glossiness giving place to a velvety sheen, the shininess in this case has been greatly augmented by the production in the epidermal cells of a highly refractive oil, and by the formation below of a layer of cells densely packed with starch granules. A mirror-like effect is thus brought about.

The glossy type of petal so characteristic of the yellow Buttercup is probably unique among flowers. At any rate, the challenge is thrown out to anyone to bring to notice a petal of another genus so glazed. As already pointed out, Ranunculus gramineus is an exception among yellow species of the genus in not having highly-polished petals. It thus resembles the white Buttercups and flowers generally. From a study, not yet complete, of this large genus, the vast majority of the yellow species have been found to possess glossy petals. Besides Ranunculus gramineus and species allied to it, the only other yellow-flowering species that I have come across with non-glossy petals is the interesting Water Buttercup (R. multifidus, Pursh.) of North America. Perhaps R. asiaticus, the parent of our garden Ranunculuses, should be added to the exceptions, since yellow-flowering forms occur wild, although red is the common colour. It is strange that, so far as I know, there is no white-flowering species with glossy petals. Glossiness seems always to be associated with yellow petals. *J. Parkin, Blaithwaite, Wigton, Cumberland.*

HARDY ANNUALS.

Many of the popular annuals largely employed in the embellishment of our gardens need the aid of a frame for raising them in the spring to secure the best results from their use; but there is a long list of highly decorative plants which come into flower within a comparatively short period of time from the sowing of the seeds, that one may sow in the positions in which they are to flower with good results, and a note on a few of the most useful of these may be of interest at the present sowing season. A border of these hardy annuals will be a source of great interest and delight, for many of them have elegant form, attractive blendings of colour and refined appearance. It is essential, however, that the sites should be prepared thoroughly to enable the seedlings to send their roots down for moisture in the early stages of growth; and that the seeds should be sown thinly, while from the first the plants should be kept sufficiently thin to prevent overcrowding. The flowers of crowded plants will be poor and their period of display brief, but bold thinning will result in robust plants with ample foliage and well developed flowers yielding a floral display worthy of admiration

Argemone grandiflora is a graceful plant with spiny foliage and large, white, Poppy-like flowers, with brilliant yellow stamens, and Bartonia aurea (Mentzelia Lindleyi) is a good companion plant, with ornamental foliage and large, deep yellow blooms of great beauty. Cacalia coccinea (Emilia flammea) is seldom grown, but is a most attractive border annual, with brilliant orange-scarlet flowers much prized for cutting. The Calendulas or common Marigolds are exceedingly showy annuals for beds and borders and may be obtained in rich lemon and orange shades, double or single, the singles being the more attractive flowers. The Candytufts are of fine habit, are very profuse flowerers and are among the gayest, hardiest and most accommodating of hardy annuals. They flower in a very short time, remain in beauty a long period, are excellent for massing in beds and borders, and are admirably adapted for edgings, while their fragrance adds to their charms.

Centaurea cyanus, the annual Cornflower, is a charming garden plant and excellent for cutting and Centaurea moschata, the Sweet Sultan, is a delightful plant, producing large, feathery flowers in various beautiful shades of colour and of delicious fragrance.

The Clarkias are remarkably effective border plants which, while having no great range of colour, possess softness and delicacy of shade which is unique. Their elegant spikes of large, handsome, semi-double flowers are very decorative and distinct. Convolvulus minor, although so brilliant in sunshine, closes its blooms in the shade, but it is worth a place in the front of the border on account of the soft, velvety texture of the flowers. The Calliopsis are exceedingly graceful border plants, providing throughout the summer an abundance of elegant, showy flowers, their deep golden petals, with dark centres, making them very attractive. Besides the tall-growing varieties, there is a pigmy race forming perfect little bushes smothered with similar brilliant flowers.

The Eschscholzias bear brilliantly-coloured flowers which produce striking effects in beds and borders. They thrive in poor, dry soils where many annuals would not grow, and reproduce themselves freely from year to year. Phacelia viscida is a little-grown plant, but exceedingly beautiful and very effective, its intensely blue flowers giving it an unusual fascination. The Godetias are beautiful hardy annuals, forming sturdy little bushes covered with large, handsome, Malva-like flowers in a wide range of colours from white, through the various shades of pink, salmon, scarlet. and crimson. Although somewhat stiff, it is an excellent border plant, holding its flowers well up and furnishing abundance of colour. Gypsophila elegans and its varieties are very graceful plants of light, fairy-like growth, as fine as G. paniculata and equally useful in vases as a groundwork for heavier subjects.

The Sunflower, in its numerous varieties, is a highly effective plant in the annual border, the taller kinds, with their massive foliage and large flowers, occupying positions at the back of the border and giving it a touch of dignity, while the dwarf sorts form spreading bushes with small, graceful foliage and bear a multitude of small, elegantly formed flowers from early summer until autumn, giving an effective finish to the front of the border. The annual Larkspurs are also splendid plants for back positions in the border, and while not having the stateliness and dignity of the perennial Delphinium, their finely-cut foliage, handsome, erect spikes of semi-double flowers, and wide range of beautiful colours give them an appealing beauty all their own. Another tall-growing plant is the lovely Mallow, Lavatera splendens, which may be had in a soft, milky-white tint and in several shades of pink and rose. Linum grandiflorum coccineum is one of the most brilliantly-coloured summer annuals, with flowers of a glowing crimson; Limnanthes Douglasii is a beautiful little plant with dainty yellow flowers, edged with white, fine for edgings, and Gilia (Leptosiphon) hybridus is another tiny plant forming dense cushions, studded with pretty flowers ranging in colour from yellow to rosy-scarlet.

The annual Lupins provide another group of large-growing plants bearing handsome spikes of flowers in many striking colours. Matthiola bicornis, the Night-scented Stock, is a most useful plant, flowering in an amazingly short time from seeds, and emitting a delicious perfume perceptible at a considerable distance; and Nigella (Love-in-a-Mist), particularly the variety Miss Jekyll, is a very graceful plant, its lovely azure-blue flowers being partially hidden by the curious, fine, feathery bracts surrounding them. Charming effects may be obtained by associating Nigellas with Eschscholzias and some of the miniature Sunflowers. No summer-flowering plants can surpass the Tropaeolums in brilliancy of colour and freedom of flowering, particularly when grown on poor, dry soils. There are many varieties of dwarf, compact habit which carry their flowers well above the foliage and create masses of telling colours of wonderful effectiveness. Mignonette is a favourite plant with everyone and, besides being richly scented, some of the varieties have massive heads of coppery-red flowers which are very charming.

Nemophila insignis is probably the most popular annual grown, on account of its easy culture. In spite of its somewhat untidy habit it is very effective for beds, borders, or ribbons, its clear, light blue flowers, with white centres, making it very attractive. Another excellent blue-flowered annual is Phacelia campanularia, a charming plant producing a terminal raceme of intense blue flowers with conspicuous white stamens.

No collection of hardy annuals could leave out the annual Poppies, favourite flowers which are used extensively in beds, borders, shrubberies and woodland, where they are particularly good for distant effect. The Shirley strain is of light, graceful habit, with beautiful, satiny flowers in a wide range of delicate shades of colour, while the giant Paeony-flowered Poppies bear large, handsome, double flowers in various brilliant colours and are splendid border plants.

The plants noted above by no means exhaust the list of hardy annuals, but give a selection of those which flower in a relatively short time from seeds, require no glass or heat to bring them on, and afford material to fill an empty border and maintain an effective floral display during the greater part of the summer and autumn. *W. A.*

PLANTS NEW OR NOTEWORTHY.

FRITILLARIA KARADAGHENSIS.

THIS new plant hails from the Kara-dagh, a district near Tabriz in northern Persia, hence its specific name. It was first discovered by Mr. Egger in 1927, when dried material was forwarded to Kew and named by Dr. Turrill. But so far as can be ascertained, it was only in 1928 that sufficient material could be acquired in order to try it in this country. In that year, Mr. Gilliat-Smith, British Vice-Consul in Tabriz, sent bulbs to Messrs. R. Wallace and Co., The Old Garden, Tunbridge Wells, who grew them and exhibited them at the R.H.S. meeting on February 26, 1929, and afterwards presented the plants to Kew.

Fritillaria karadaghensis (Fig. 107) is a charming little bulbous plant, very near F. graeca, but somewhat lighter in colour and heavier in foliage. It is six to seven inches in height, bearing at the apex of each single stem one or two bell-like flowers some three-quarters-of-an-inch in length; the sepals and petals broaden from a quarter-of-an-inch at the base to half-an-inch towards the apex, recurving a little when fully opened and having a thickened ridge running down the centre of each.

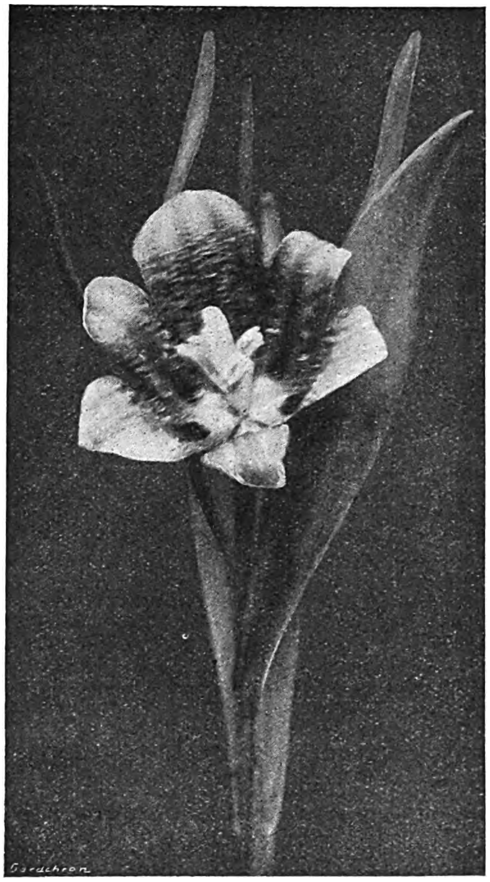


FIG. 107.—FRITILLARIA KARADAGHENSIS.

In colour the flower is a yellowish-green, speckled with reddish-brown, of varying intensity in the different flowers, the markings becoming deeper in colour and suffusing the whole flower as this passes from maturity. The style of pale yellowish-green is just a little longer than the stamens, sufficiently so to allow its three-rayed stigma to overtop the anthers when open, but not enough to show outside the bell of the flower when in its earlier stages. The leaves are lanceolate, from two inches to four inches in length by half-an-inch to three-quarters-of-an-inch in breadth, of a glaucous, bluish-green shade, arising singly at intervals of three-quarters-of-an-inch to an inch apart on the stem, but less towards the apex.

The plant ought to be perfectly hardy in some sheltered position, but, so far, no actual proof can be given of its hardiness in this country; it seems to prefer a well-drained peaty loam, and the pans of it that have already been grown are proof of its readiness to flower in suitable surroundings. *A. Edwards, Kew.*

RHODODENDRON TELOPEUM.

A SMALL plant of this species was shown by Lady Aberconway and the Hon. H. D. McLaren, Bodnant, at the Royal Horticultural Society's meeting on March 12.

Rhododendron telopeum (Fig. 105, p. 217) is one of the newer Chinese species collected by G. Forrest, and described by the late Sir I. Bayley Balfour and Forrest in the *Notes of the Royal Botanic Gardens, Edinburgh*, Vol. XIII, p. 61, 1920, where its locality is given as south-eastern Tibet, Tsarong Salween and Kui-chiang divide. This species belongs to the campylocarpum group. In the original description the flowers are given as bright yellow, but this was not borne out in the plant as exhibited, as the colour was pale yellow; this difference, however, may be due to climatic conditions, such as lack of light, or the plant may have been grown indoors. The growth is slender and twiggy in character, the leaves about five centimetres long, rounded or elliptical in shape, bright green above, and somewhat glaucous underneath; the petioles and small calyx lobes are more or less pubescent or glandular; the corolla, as in R. campylocarpum, is campanulate, measuring about three centimetres across.

Whether this species proves hardy, except in the more favoured parts of the country, remains to be proved. It may possibly have some value for hybridising, as a good race of yellow-flowered Rhododendrons for the garden is yet to be sought and is much desired. *F. C.*

INDOOR PLANTS.

BOUGAINVILLEA MRS. BUTT.

FOLLOWING an extended experience with this plant, I do not hesitate to bestow upon it unstinted praise as a permanent greenhouse decorative subject, or as a pot plant for general decorative work; for well-flowered examples clothing the pillars or trained to the rafters of a structure, are markedly beautiful, but not more so than are compact specimens grown in pots of seven or eight inches diameter. I find this beautiful Bougainvillea is prone to flower in a smaller state than will the majority of its congeners; the colour of the bracts is not easily described, but, perhaps rosy-crimson of a remarkably bright shade will nearly meet the case. The plant is vigorous, and the foliage ample and thick-textured. Cuttings root with ease and soon make serviceable flowering plants. *A.*

PLUMBAGO ROSEA.

INTRODUCED from the East Indies so long ago as 1777, this elegant plant is not so widely grown as its merits deserve, for few plants are more useful as winter-flowering subjects. Its large, oblong, almost amplexicaule leaves, above which are borne long, graceful spikes of soft red-coloured flowers, give the plant a refined appearance, and during the dull period of the year its attractive colouring is particularly valuable. Apart from its usefulness as a pot plant, it is also serviceable when cut, the slender spikes lending themselves admirably to table decoration and remaining fresh for a considerable length of time.

Although its country of origin suggests stove treatment, better results are obtained by growing P. rosea under cool conditions, and during the summer, from July to September, no more protection than a cold pit affords is necessary. The most useful plants for decorative purposes are obtained from spring-struck cuttings and these, if stopped once, will produce five or six growths which develop into flower spikes. Overpotting should be avoided, five-inch pots being quite large enough to support strong, single specimens; should larger specimens be desired for special purposes, two or three plants may be placed in a six-inch pot. A mixture of two-parts good fibrous loam, one part decayed manure, with a sprinkling of coarse sand and a little bone-meal added, makes a suitable compost, and firm potting should be practised. If grown in a cold pit until the end of September, the plants will have made good foundations for subsequent flowering, and should then be transferred to a light house of intermediate temperature, where a free circulation of air and a fair amount of atmospheric moisture will maintain sturdy growth. The season of display may be lengthened somewhat by giving a number of the plants rather warmer conditions and thus accelerating the development of the flower spikes, but they should never be subjected to a very hot and humid atmosphere. *A. W.*

ARISTEA CORYMBOSA.

This interesting Irid, of shrubby and tufted growth, is an admirable plant for the cool greenhouse, delighting in a light, airy position and a peaty soil. The erect stems are clothed with small, glaucous-green, Iris-like leaves and, in winter, the corymbs of bright blue flowers will provide an interesting and attractive feature; there is, I believe, a variety with charmingly variegated foliage, of decidedly cheerful appearance.

Propagation of Aristea corymbosa may be effected by seeds sown in spring, by division of the plant, or by removing and growing on the sucker-like offsets.

A. corymbosa was at one time commonly known as Witsenia corymbosa; it was introduced from South Africa in 1803; there are several other species of value.

Aristeas are very ornamental when grown in pans, with a little charcoal added to the peat, or they may be planted in a border in the cool house. *R. E. A.*

ERYNGIUMS.

There are, in all, over one hundred species of Eryngium, but comparatively few of them are worthy of garden culture. However, among those that claim this distinction are some which rank among the handsomest of border plants. In the first place, the Eryngiums are divided into two classes, so distinct in their foliage that it is only in their blooms that the affinity can be traced. The group plant-lovers in general are most familiar with is that in which the upper foliage is divided and, in most instances, furnished with striking steely-blue colouring, and in which, also, the upper portions of the stems, and the prominent involucres are bedecked with similar brightness. The second group, the majority of whose members are only half-hardy, coming as they do from southern America, is what is generally termed the Pandanus section, the numerous species under this heading being distinguished by their long, undivided, but spiny-margined leaves of a subtropical appearance, and useful for producing such effect, but otherwise of comparatively little value for English gardens. Of them, E. pandanifolius is probably the most useful, and possibly the hardiest, and this may be employed in much the same manner as the Pampas, for it forms huge clumps of long, slender leaves, four feet or so in length, with spiny-toothed margins and tinged with a glaucous hue. But whereas the Pampas produces a handsome inflorescence, that of E. pandanifolius is, conversely, just as unattractive, consisting of a large panicle of small, green, rounded heads of flowers; however, for large spaces and as a specimen plant, E. pandanifolius has its uses. Other members of the group which enjoy a certain amount of popularity are E. agavifolium, with stout, long, coarsely spinose-serrated leaves and large, Teasle-like flower heads; E. aquaticum, E. eburneum, E. bromeliaefolium, E. Lassauxii and E. Serra, the last-named forming a large rosette of broadly sword-shaped leaves, up to about two feet long and with saw-like margins.

But it is with the other section that gardeners are chiefly concerned, for among its members are such handsome subjects as E. alpinum, E. giganteum, E. amethystinum and E. tripartitum, to mention but a few by way of introduction. These are all comparatively easily grown herbaceous plants, flourishing in deep, loamy and well-drained soil, hardy, and in most instances enjoying full exposure to sun, while, like many other fleshy-rooted subjects, they may be increased fairly successfully by root cuttings, or they may be raised from seeds sown either in autumn or early spring, the plants, if grown on in nursery beds, flowering when two years old, although if planted early and given generous treatment, some of them, such as the richly coloured E. tripartitum, will provide a bright display in the autumn of the same year.

E. alpinum, one of the handsomest of the species, is not so common as some of the others, E. amethystinum often arriving under its name, although from this latter species it is quite distinct. It comes from the alpine meadows of Switzerland where, although not rare, it is rather local in its distribution, and it seems to prefer slight shade in cultivation. Its dominant colouring is bright, steely-blue, the upper, branched portions of the flower stem; the finely and deeply-toothed, palmately-lobed, cauline leaves; the large and soft-textured involucre bracts with finely-cut, feathered margins; and the large flower-heads themselves, all being enveloped in this beautiful colour, and presenting in July and August a picture of striking beauty, being borne above a radiating cluster of long-petioled, deeply cordate and finely serrated, rich green basal leaves. Such is E. alpinum, one of the handsomest plants of the Swiss mountains.

And then, the Caucasus has given us E. giganteum, the Elves' Bones, so named on account of the silvery-whiteness and somewhat bleached appearance of its upper parts. This species attains a height of three to four feet, and, when cut, is much prized for winter decoration, a purpose for which this group of Eryngos is specially adapted. It is the giant of the section, the stout stem being clothed with shiny and deeply-lobed leaves and branching dichotomously in the upper part, to bear, terminately, large heads of flowers, each encircled with an involucre of eight or nine large, finely-cut leaves.

E. maritimum, our native Sea Holly, is by no means to be despised as a claimant for a place in the border or wild garden, for its metallic-grey leaves and flowers, borne freely on much-branched stems of one-and-a-half foot or so in height, during the latter part of summer, are often much admired; while E. planum, with erect stems to a height of three feet; ovoid or globular flower heads; narrow, rigid and spiny involucre leaves, and deeply divided, clasping leaves, all richly coloured with blue, is also worthy of a place.

As stated previously, E. tripartitum, considered to be of hybrid origin, ranks among the most beautiful of the Eryngiums. It is of different habit to the stronger-growing sorts, for the small, rich metallic-blue flowers, vivid in the intensity of their colouring, are borne in a mass of densely-branched, slender but stiff stems of the same colouring, the whole being up to about two feet high.

E. Spinalba is rather uncommon, but strikingly handsome. The lower part of its stem is whitish-green, while the upper portion, together with the ovoid-cylindrical flower heads, and the rigid, spiny involucre leaves, are steely-blue. This is another species from the European Alps. E. amethystinum is well worth its place in the garden, for it grows to a height of about two feet, and is of rather loose and open habit, while the colouring of its stems, upper leaves and flowers is rich amethystine-blue, sometimes inclined to be bleached. E. dichotomum is also desirable, its two-feet stems, globose flower heads and bracts being glaucous-blue in colour.

There are several Eryngiums of hybrid origin, notably E. Oliverianum, a strong-growing sort and one of the handsomest, with spreading involucres and flower heads of rich violet-blue. E. hybridum is a free-flowering sort with metallic-blue colouring, two attractive varieties of it being Jewel and Violetta, the former bright blue, and the latter a distinct shade of violet-purple; E. Zabelii is a lovely hybrid of amethyst colouring.

The above is merely a selection of what are possibly the finest of these beautiful, late summer flowering plants for the herbaceous border, or for grouping in sunny portions of the wild garden, where they will sometimes seed themselves and naturalise to a greater or lesser degree, but there are two species, namely, E. prostratum and the rare E. glaciale, which are specially desirable for the rock garden. E. prostratum is described by the late Reginald Farrer as a "bog plant" from Texas which, if planted in moist situations, "should make a running carpet, rooting as it goes, along all its ground-hugging branches." But that it would survive such conditions in this country is doubtful. I grew it (in ignorance) in the hottest position available, and fairly dry at the roots, and there it flowered abundantly, and formed a close, silvery-blue mass. In the winter it had a pane of glass to protect it, but it did not survive—possibly a moist place would have been better for it! E. glaciale is seldom offered; it inhabits hot, dry places at high elevations, in southern Europe, and there forms spiny tufts of silvery-grey, tinged with blue. It would appear to be a very charming subject, and in cultivation would probably require moraine treatment. *M. W.*

GARDEN CRINUMS.

Among the hundred or more species of Crinum, and the many hybrids which have been raised, there are very few that can be called permanent garden plants in the south of England. We live on the edge of the climatological area in which many of these plants flourish, and in favourable years quite a number will do well in our southern gardens. But, in our average summers the growing period is too short for them to increase in size and strength, and what we witness is a gradual exhaustion of the initial energy possessed by the bulbs when first planted, and their ultimate death. But there are some kinds that have become established here and do well. In the following notes I have omitted all the doubtful kinds and have dealt only with those of proved ability to thrive in our climate.

In the open ground, C. longifolium (capense) is hardy in most places, but it is doubtful whether it is worth growing. There are some finer types allied to C. longifolium which are worth growing —such as C. lineare* and C. variabile*—but these are not so hardy as the type of C. longiflorum. C. Powellii (A) was considered hardy, and is hardy in places near the south coast, but Messrs. Williams, about forty years ago, lost an entire bed of C. Powellii through an intense frost. Their gardens were near Lord's Cricket Ground.

Planted close up to a wall and covered with a foot of dry material in winter, the following are successful:—

C. Powellii (A) all varieties. Flowers July to September.

C. yemense (B). Flowers before any other Crinum. White, fragrant.

C. pratense (?) (C). Beautiful and very fragrant white flowers with red keel. Fugaceous. Flowers in June and July. Not the C. pratense of Baker.

C. Tubergeni* (C). A fine and fairly hardy plant, but does not do well with me.

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* Signifies that such plants are difficult to obtain.

(A) Signifies kinds that flower regularly in most places in the South of England.

(B) Signifies kinds that flower occasionally in most places in the South of England.

(C) Signifies kinds that flower in some places in the South of England.

Crindonna memoria Corsii (A). Most floriferous and beautiful. Flowers pink.

All these Crinums prefer a heated wall.

In a bed in a cold house, and mulched against frost, there are many Crinums that can be successfully grown, but thrips must be guarded against. Most deciduous kinds do well so grown, but not the evergreen kinds.

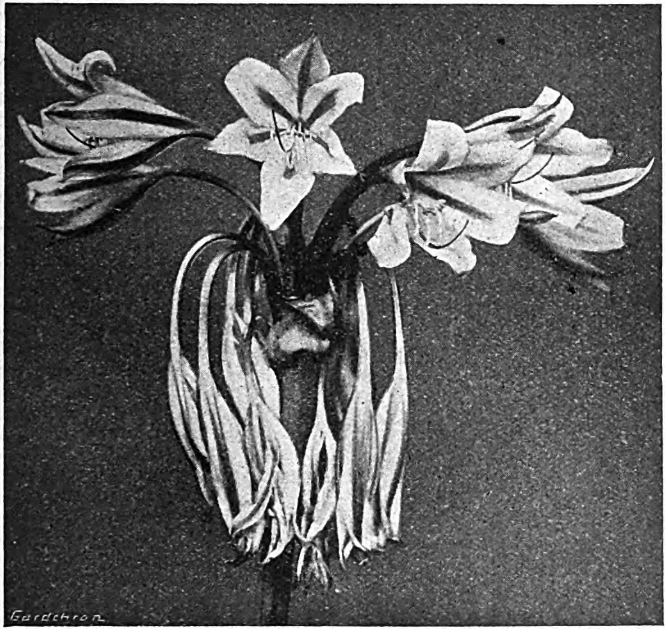

FIG. 108.—CRINUM SP. FROM THE SUDAN.
Flowers fully open.

In a temperate house the following do well in pots:—

C. fimbriatum. Very floriferous and beautiful. Will do well in a pot of moderate size. Pink and white.

C. giganteum. Flowers in late autumn and winter. Floriferous. Pure white.

C. scabrum. The small-leaved kinds, like those of Jamaica, are most beautiful, but demand large pots and careful culture. White, striped carmine.

C. odorum.* This species from southern Brazil is second to none in beauty and grows freely. White, striped pink.

C. Moorei. Some varieties are worth growing, especially the original importation figured in *Bot. Mag.*, t. 6,113*; also var. Schmidtii, figured in *Regel's Gartenflora*, t. 1,072, but many more recent importations are poor things.

Crindonna memoria Corsii.

Anyone who can spare sufficient room to plant out Crinums in a warm house has a wide choice. I used to grow C. amabile (C. augustum ?) thus, and with great success. Its flowers are of astonishing beauty and fragrance.

With the exception of kinds in general cultivation, it is now difficult to obtain large bulbs ready to flower shortly after planting. Very many species have disappeared from catalogues since the war, and I can give no help in suggesting where such bulbs may be obtained.

As our outside Crinums, such as C. Powellii, have long, straggling leaves, they should be grown in a thickly-planted row against a wall. The mass of foliage then produced holds itself up somewhat, and holds up the flowering stems, too, against winds and rains. No attempt should be made to plant a single bulb as a specimen in an isolated place. Crindonna has shorter foliage and is more desirable on this account.

Of the great number of hybrid Crinums raised in English gardens, very few indeed have survived for any number of years. Some were vigorous enough for a few years, but then disappeared. I have raised quite a number in my garden, and some of great beauty, but none of them survived the stress of the war years. C. Powellii is an outstanding exception, and is now to be found all over the temperate regions of the world.

Practically all the Crinums are valuable as cut flowers for large vases. C. Powellii is now becoming a market flower for such purpose. The umbels will last about a week after cutting. Some sorts are rather fugaceous. On the other hand, C. Moorei, C. giganteum and many others, only expand fully after sunset and look at their best for evening decoration. Some of the tropical Crinums are exceedingly fragrant, and most kinds are scented to some degree.

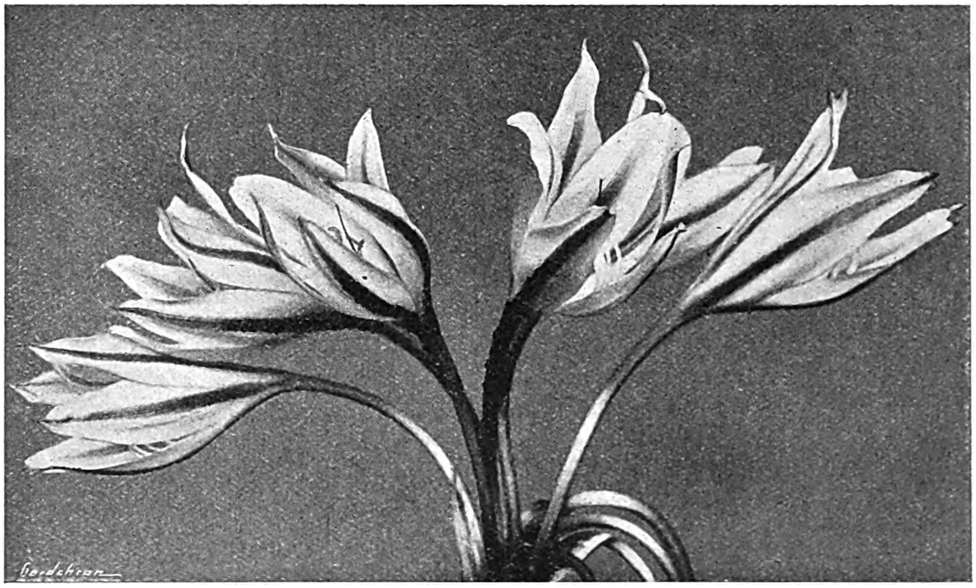

FIG. 109.—CRINUM SP. FROM THE SUDAN.
Flowers partly open.

Sub-genus Codonocrinum.

This sub-genus is distinguished by Baker on account of a funnel-shaped perianth, a permanently-curved tube, and contiguous filaments. He admitted twenty-seven species in this sub-genus, and since his day many more specific names have been added.

In early days, geographical distribution was relied on, and botanists have tried to maintain this line of division between species. But the trouble is that over a wide belt of tropical country going east and west the same groups of species, in endless variety, persist over the whole of the zone. We find the one- to three-flowered C. scabrum type of the west coast merging insensibly into the eight-flowered typical C. scabrum, and that again into the twenty-flowered forms classed under C. zeylanicum.

The problem of specific rank among these striped African Codonocrinums has puzzled every botanist, and remains unsolved to the present day. It is practically certain that the Crinum here figured (Fig. 108 and 109) belongs to this section of Codonocrinum.

Crinum Species from Sudan.

The pair of photographs sent herewith (Figs. 108 and 109) are of a plant from the Sudan which is either a new species belonging to the above group, or is an especially beautiful form of some member of this group of species and varieties.

It is remarkably floriferous, carrying five or six scapes in succession at midsummer, each scape bearing about twenty flowers of great size and opening in succession. These are white, brilliantly keeled on both sides with carmine. It has a deciduous, pyriform bulb about five to six inches in diameter, foliating in spring, and carrying seeds freely.

All the varieties of C. scabrum which I have grown, or seen, carry not more than eight flowers to the umbel, and never throw up more than two, or rarely three, scapes during the growing period. But the bigeneric hybrid, Crindonna memoria Corsii produces so many as four or five scapes in one season.

There are two garden divisions into which C. scabrum may be roughly divided: (1) The foliose African varieties, whose flowers are neither very large nor very beautiful; and (2) the less foliose forms, some of which are American, and which carry the most beautiful flowers in the genus. The best form I have ever seen I gathered in Jamaican gardens, but it is doubtfully indigenous there, as the slaves from Africa used to plant this species wherever they went, considering the juice of the bulb to be a remedy against a contagious disease.

In a short time it may be possible to determine the affinity of the fine Sudan plant figured on this page. *A. Worsley, Isleworth.*

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* See p. 222.

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CHILE AND THE ANDES.*

No. VIII.

FROM Valparaiso we got occasional glimpses of the Andes, pale and dim and enormously distant, and it made us restless to get away from town to the mountains. But it was mid-September, and still too early to be pushing up into the Andes. We found, however, plenty of useful collecting to be done in the immediate neighbourhood, and by making short raids into the country. We went one day to Villa Altamana, an hour or two by train, a small, dull, tidy town, and from there walked up into the hills.

From the train we saw a few scattered specimens, on the hillsides, of the native Chilian Palm, Jubaea spectabilis, which has become extremely scarce. A very splendid Palm it is, running up to fifty feet or sixty feet, with a smooth, silvery, ash-grey trunk like elephant hide, and a noble, plumose head of rather glaucous blue-green. Darwin did not admire Jubaea spectabilis, although he wrote an interesting account of it. In his day, it grew in countless thousands, but the Chilians make a sort of honey, Miel de Pelma, by cutting down the trees and draining the sap from the trunks. This Palm honey is, or was, a great delicacy, but through its manufacture the Jubaea became almost exterminated. There still exist groves of it at Ocoa (Fig. 112), and occasional, scattered, isolated specimens are to be seen here and there such as those on the way to Villa Altamana, while in a small way it is raised in one or two Chilian Nurseries for planting in gardens and public parks. But the vast Jubaea forests of Darwin's day have gone, wiped out for the sake of the Palm honey. Vanished sources of supply, however, seem to have made no difference to the actual supply. Miel de Palma is still a popular delicacy, sold in tins and served in restaurants, with a picture of Jubaea on the label to help out one's imagination. It is probable that more of this honey is produced now than in the days when there were Palms to produce it from. What a pity they did not think of this before, and save the Palms! Jubaea spectabilis is grown occasionally on the Riviera, and is hardy in favoured districts in this country, such as the Isle of Wight, etc.

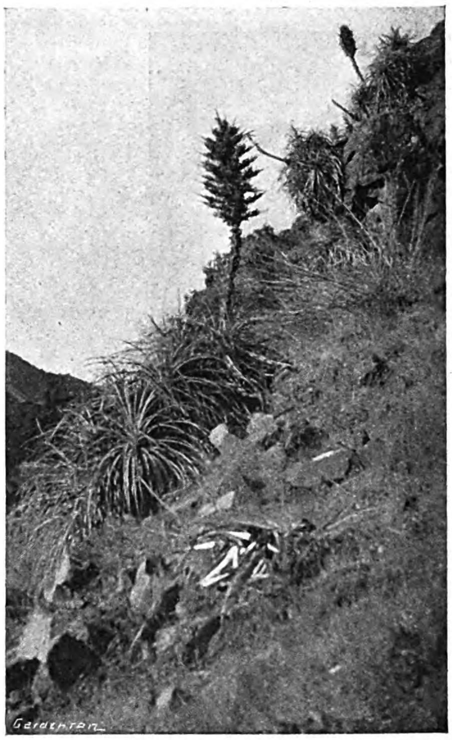

FIG. 110.—PUYAS ON A CHILE HILLSIDE.

At Villa Altamana I found Acacia cavernea (?), a Mimosa growing with the picturesque habit of a British Blackthorn. The trees were still leafless, but the terrible double thorns, three and four inches long, with which they were armed, gleamed white in the sunshine and made them look extraordinarily like Blackthorns in full blossom (Fig. 111). Later, I saw Acacia cavernea (? Cavenia) in flower, and thought it an attractive tree. It has the typical pinnate leaf of a small, neat Mimosa, and the little velvet bobbles as flowers, but instead of the usual canary-yellow they are a rich treacly-gold, and heavy with a peculiarly heady and rather worldly fragrance. Not so the roots, however, for they give off one of the most offensive stenches of any plant I know. I brought home a few seeds, and recently, when half-a-dozen seedlings, a couple of inches high, were being potted up, very grave complaints were made to the potter by folk who were working four or five yards away in the same shed. I would hardly have thought this possible had I not knocked out one of the tiny seedlings to give myself a practical demonstration of the vileness of its minute roots. It is possible that this plant may prove hardy in one or two of the districts in England and the west of Scotland, where Camellias and Mimosas flourish in the open, and it will, I think, make a good pot plant for the cool greenhouse.

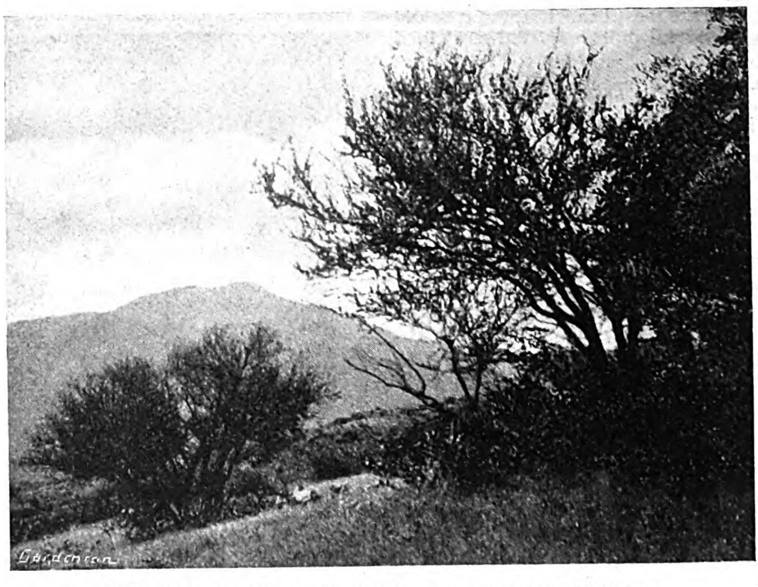

FIG. 111.—ACACIA CAVERNEA (?) NEAR VALPARAISO.

Puya chilensis grew in great abundance on these hills, and formed great specimens fifteen feet and twenty feet across, like gigantic, sprawling colonies of Yucca (Fig. 110), with elongated, thorny leaves. We found vast numbers of these Puyas which had been burnt out, and were told that they catch fire spontaneously from the sun's heat. Many were burning on the hills while we were there, and I found that a single match applied to the tip of a dead Puya leaf, will, in five minutes, produce a roaring, blazing furnace of unbelievable and almost terrifying intensity. There is always enough old, dead dry leafage to consume the whole of the green, leafy plant, and, fortunately, the plants grew isolated, so that there was no fear of setting the whole countryside in a blaze. Matches are reasonably cheap in Villa Altamana, and Puyas must be the worst possible grazing, and for these reasons I do not attach much importance to the spontaneous combustion theory.

In the cooler, shadier folds of these hills, the lovely Tecophilaea violaeflora was very abundant. It grew on little swards of brilliant emerald-green, annual herbage, and here for the first time I realised the plant's extraordinary beauty. The brilliance and intensity of its pure blue gave an illusion almost of Gentiana verna at its best in the Alps, although the illusion was instantly dispelled when one looked up and saw around one groves of enormous Cacti fifteen and twenty feet high.

On this same expedition, we saw Tropaeolum tricolor for the first time, trailing its lovely flowers with incomparable grace. It grows from a corm, like a Cyclamen corm, and trails over bushes just as its cousin the Flame Flower (Tropaeolum speciosum) trails, with the same dainty leaves of fresh lettuce-green, but the flowers of T. tricolor are smaller and neater, little, curved, elfin caps of a soft brilliant scarlet, changing suddenly at the mouth to purplish-black, with a touch of yellow within, or in some forms a touch of emerald-green. They are strung in tapered flights, minute green buds at the tip of the flight, and so ranging back, larger and larger, and more fully coloured, until the last and largest are intensely brilliant. I came upon T. tricolor many times in many parts of Chile, and every time I saw it I marvelled afresh at the enchanting beauty and brilliance of its blossoms. The plant is, of course, well-known in cultivation, although one seldom meets it nowadays. Its half-hardiness, has, I am afraid, been long established, but I collected many seeds, so I hope that this lovely thing may be seen more often in cool greenhouses. *Clarence Elliott.*

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* Previous articles on Mr. Clarence Elliott's expedition were published in our issues of November 12 and 26, December 10 and 24, Vol. LXXXII; January 7 and 28, Vol. LXXXIII; and July 28, Vol. LXXXIV.

PLANT HISTORY IN NOMENCLATURE.

(*Continued from p.* 204).

The Story of the Citron.

While dealing with the Citron and Lemon we found ourselves faced with certain questions relating to the Semitic languages, and the usages of the Hebrews in ancient and modern times (see p. 204). In attempting an answer to those questions we will begin by citing a passage from the Hebrew writings, which forms an excellent starting point for our investigations.

"Ye shall take you on the first day boughs (margin 'fruit') of goodly trees, branches of Palm trees, and the boughs of thick trees, and Willows of the brook" (*Leviticus*, xxiii, 40).

A volume might be filled with the learned notes which have been written on these words; but our special concern is with the phrase which was formerly translated "boughs of goodly trees," but now reads in the Revised Version, "fruit of goodly trees." Much confusion has been introduced by writers who do not keep in mind the fact that many of the fruits which are well-known to-day were unknown to the ancients. The Hebrews certainly knew the Fig and Grape, the Pomegranate and Date, but when we come to the Orange, Lemon and Citron it is a different proposition. Yet, in some way or other the Citron, of which we wrote in our last paper, has come to be most intimately associated with this phrase, and with the observance of the Feast of Tabernacles by the Jews. Can we trace the Citron back to pre-Christian times? Much depends on the meaning we place upon the words in use among the Semitic races. There are many references in early writings to the Apple, but that word was employed very vaguely, and covered a variety of fruits. Golden Apples may have been any kind of fruit with a rich colour, and the term certainly was not always used of, or restricted to, either Apples or Oranges.

One of our earliest and best authorities is Josephus, and we therefore turn to him for help. Here is an interesting passage from the Antiquities (xiii, 13, 5), referring, perhaps, to the year 95 B.C. "As to Alexander, his own people were seditious against him; for at a festival which was then celebrated, when he stood upon the altar, and was going to sacrifice, the nation rose upon him and pelted him with Citrons."* These fruits, Josephus tells us, the people were then carrying, because the law required that at this festival everyone should be provided with branches of Palm-tree and Citron-tree. Chiefly on the strength of this passage it has been affirmed that the Citron, whatever may be said respecting the Lemon and Orange, its nearest relations, was certainly known to the Jews several generations before the time of Christ. Moreover, the *Targum* on the passage from Leviticus explains the phrase "fruit of goodly trees" by words which may be translated "the fruit of the Citron trees."

Here, however, a new difficulty arises, for while Josephus uses the Greek word "Citron," the *Targum* employs a Hebrew or Aramaic word of a totally different kind, and the question is—Can we show that the Greek Citron tree (κιτςεα) and the tree represented by the Hebrew word, usually written *ethrog* in the English transliteration, are one and the same? The word *ethrog* is related to the Arabic, as we find it in the place-name Jebel-Atranjah, or the Citron Mountain, and leads us to suppose that the Jewish commentators used the popular Arabic name for the Citron when explaining the early usage. One of the Greek names for the Citron was Persian Apple, and this suggests that the western knowledge of the Citron was derived from the east. Since the Jews were intimately acquainted with Babylonia and the surrounding countries they undoubtedly became familiar with the fruit in very early times, as De Candolle and other authorities on cultivated fruits have pointed out. It was a native of Media, and was introduced into Palestine, where it soon became established. And in this connection it is of interest to be able to turn to the Jewish coinage, which bore representations of various objects having a religious or historical nature. Among these are some relics of the Asmoneans, and in particular the so-called Lulab coins. These are so named because they bear, among other things, representations of the Palm branch, or Lulab. They have been very carefully and critically examined, and are held by experts to be an attempt to put the plants of the Feast of Tabernacles in pictorial form. On one side of these coins a vessel containing three plants is represented, with a fruit on the left side of the basket. "The fruit and the three plants have been identified as those named in Leviticus xxiii, 40, the fruit of the goodly tree, branches of Palm trees, boughs of a thick-leaved tree, and Willows of the brook, generally called the *arba minim*, or the four kinds, viz., the *ethrog* (Citron), *lulab* (branches of the Palm tree), *hadassim* (Myrtle), and *arabhah* (Willow)." This agrees with what we find in the *Talmud*, where a bunch made up of Palm, Myrtle and Willow is ordered to be carried in the right hand, and a Citron, Orange or Lemon in the left. This usage, which persists to the present time, is not based on any Old Testament law, but shows how in the course of ages the Jews had been affected by their association with the surrounding races. We see clear evidence of the influence of Greek religious usages, such as prevailed at their harvest festivals and in the worship of Bacchus.

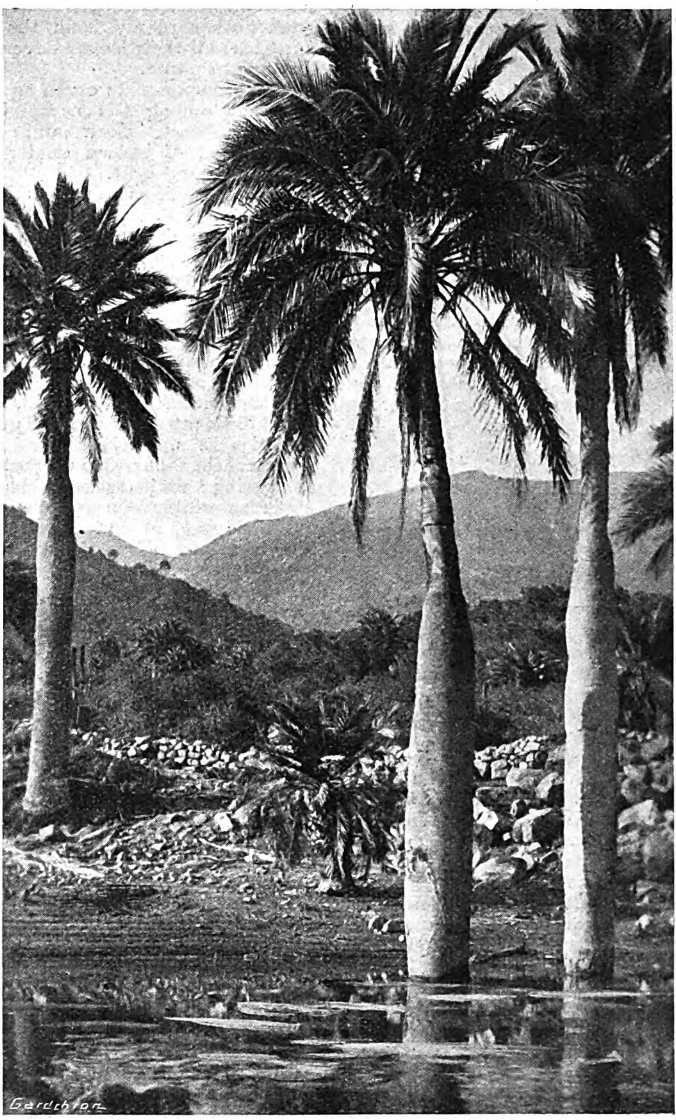

FIG. 112.—JUBAEA CHILENSIS AT OCOA, CHILE.

Recent research brings to light the fact that the Citron and other fruits were associated with worship in almost every eastern land. In India the Lemon is used emblematically perhaps in some phallic sense. If we go further afield we come across the fact that in China to-day the horned Citron or "Fat-shau kom," as the Cantonese term it, is carried by the Chinese in their hands on certain occasions, and is regularly placed as an offering on the Buddhist altars. For a valuable notice of this monstrous form of Citron we may refer to the issue of this journal for March 20, 1890, p. 385, with illustration.

It is further possible, we think, to show that the Citron was used in very ancient times by the Assyrians and Accadians, together with the Cedar or Fir-cone, and thus came to be known among the Hebrews. This being so, we shall be entitled to look for light on the origin of the name "Citron" in the Assyrian and early Semitic languages, while it may further be easy to discover how it is that the Latin and Greek words for the Citron and Cedar have in later years been confused. They were, doubtless, originally one and the same. As philologists have failed to find any satisfactory history of these words in the Aryan root-forms, Semitic scholars will readily admit that they may contain the three consonants which are characteristic of Hebrew, Arabic and allied tongues. Can we, then, find a Semitic root (or roots) with the consonants c-t-r, or k-d-r, which will give us Citron, Cedar, (κεδοσος), and the allied forms? And if so, can we find the same root in *ethrog*? The answer is in the affirmative.

Let us remember that the Citron, is in Chinese, the "Fragrant Fruit," and that it is used for scenting rooms, and producing a grateful perfume in sacrifices. Thus it is in a sense a substitute for incense. Now incense in Assyrian was *kutrinnu*, a word which is identical in form with Citron or κιτσον. And since Cedar wood entered into the manufacture of incense it is easy to see that this word is from the same root. Possibly the Cedar cone and the Citron fruit were interchangeable. In Hebrew, Arabic, Syriac and Aramaic the same word is found, and this under two forms. In one form it has the three consonants, k-t-r, c-d-r, or q-th-r, and in the other the initial letter is softened or reduced to a breathing or nasal, and so becomes e-th-r or a-t-r, with a variety of modifications in derivatives; and so we get *ethrog*, and the name of the Citron mountain, Atranjah.

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* This story is related of other persons in the *Talmud* and elsewhere.

We thus arrive at these conclusions: The Citron has been known in the east from time immemorial. It is a Median fruit, and as such would bear a name which was significant of its fragrance. The root of this word is to be found in the old Semitic name for incense, and in the Hebrew and allied words. It survives in the word *ethrog* which means Citron in the *Talmud*, and in the Arabic name for the Citron mountain, and was taken up by the Greeks who adopted the name and adapted it to the genius of their language, handing it on to the Romans as Citron. But the Cedar bore the same name, the word dividing, as was so often the case, into two cognate forms, and from this followed the fact that in the Romance languages some derivatives are from Citron and others from Cedar, even the dictionaries until quite recently failing to trace the connection. I think that the word nectar may be traced to the same source, since it is without a satisfactory Aryan pedigree. *Hilderic Friend.*

(*To be continued*).

EFFECTS OF THE GREAT FROST IN SUSSEX.

This county, situate in the south-eastern corner of England, no part more than thirty miles from the sea, and favoured by sunshine, would appear to be an ideal home for many of the somewhat tender plants introduced from other climes. It must not be forgotten, however, that Sussex shares with Kent a close proximity to the continent, rendering it liable to the unmitigated severity of north-easterly winds, which bring very low temperatures from colder regions.

The most favoured part of the county is probably the southern side of the forest ridge, running east and west, beginning south of Tunbridge Wells and culminating in a peculiar V-shaped formation of low, wooded hills sheltering the well-known gardens of South Lodge, and Leonard's Lee, on the east side of Horsham. Several other noted gardens are situate either on the small spurs, or in the sheltered valleys (combes) at right angles to the ridge. Worthing is, of course, famed for the earliness of its produce and frost is, perhaps, less severe there than anywhere else in the county.

The coldest night was that of February 14, when 20° to 26° of frost were registered in various gardens in Sussex the following morning. It is still too early to decide the amount of damage suffered by the more tender trees and shrubs. Much is already apparent, and it must approximate closely to that of the winter of 1916 and 1917, or even of 1895 and 1896. In both previous cases the frost was prolonged and losses sustained were more probably due to the persistence of low temperatures than to severity of any one particular night. The recent frost has been notable, at least, in the south, for the absence of any depth of snow, and a considerable amount of sunshine.

Judging from many letters received and my own experience, the more tender Ericas, and especially E. Veitchii, have either been killed or injured. Large plants of E. australis, although not altered in outward appearance, have their bark on the older wood split into long shreds, easily removable by hand, the bare wood showing beneath. E. lusitanica and E. arborea do not appear to have been affected in this way, but some of the smaller branches half-an-inch in diameter, are splintered into six or more sections. E. vagans is injured in the same manner.

Regarding the Rhododendrons it is difficult to judge; the earlier buds on such varieties as R. Nobleanum have been destroyed, but most species and varieties are backward, the cold has retarded the sap, and buds have expanded but little, even so, embryo flowers are often injured by frost. This occurs sometimes in November, for blackened flowers may be found in December if a bud is cut through transversely, hence the imperfect trusses which appear later. Among seedling R. arboreum plants, six to eight feet in height, it is interesting to notice the different degrees of hardiness; some are unharmed, with leaves of a rich dark green, other plants from the same seed-pod, must lose all their leaves—even now they rattle like brown paper.

All correspondents agree as to the few losses apparent among the newer introductions by Messrs. Forest, Rock and Kingdon Ward. Only a few, of known tender character, have been killed outright.

Tender Conifers, such as Pinus patula, P. Montezumae, P. Torreyana, Cupressus lusitanica and C. cashmiriana, have in most cases been severely injured, although even these seem to have escaped in one of the warmest gardens. Abies religiosa, Lindera megalophylla, Maytenus Boaria and Lonicera nitida have shed their leaves profusely. Large plants of Leptospermum scoparium which came safely through the winter of 1916 and 1917 are badly damaged, and the withered leaves will, if the plants are not killed, probably drop. This species, and its varieties L. s. Nichollii, and L. s. Chapmanni, appear most vulnerable to frost when the plants are ageing; we lost several about eighteen years of age last winter, whereas younger plants escaped.

Eucalyptus, of which many species have of late been planted in Sussex, will, if not killed, require many years to recover. E. Muelleri, E. regnans, E. vernicosa, E. viminalis and E. cordata are among those injured. Drimys Winteri, D. aromatica and D. colorata, all show damage, but this, it is hoped, is more apparent than real. Nursery beds of E. cordifolia, slightly protected, are severely injured or killed; older plants and specimens are browned, Eucryphia Nymansay (E. cordifolia × E. pinnatifolia) has sustained no injury, even the buds at the ends of immature shoots are undamaged, a few of the older leaves are browned, but this appears to be the case with all evergreens, Box edgings and Laurel, being sadly discoloured.

Hydrangeas, of the hortensia section, have most of their terminal buds destroyed; the axillary ones sometimes produce flowers, but they are never so fine. Others, including H. Sargentiana, appear uninjured. Hoheria populnea, twenty feet in height, Rhaphithamnus cyanocarpus, Olearia Forsteriana, O. nitida and Mitraria coccinea suffered cruelly last winter, and it is doubtful if they will survive the second ordeal.

The more deciduous Nothofagus, such as N. obliqua, N. procera and N. antarctica, are apparently uninjured; N. cliffortioides, N. Solanderi and N. fusca are doubtful, but the foliage on N. Dombeyi, N. Menziesii and N. betulioides is certainly destroyed and possibly the trees as well. Berberidopsis corallina, Lapageria rosea and its variety alba, Kadsura chinensis, Euonymus fimbriata, Osmanthus Fortunei, O. Forrestii, Myrsine africana, as well as the Tricuspidarias, have a miserable, browned appearance, and will most likely need the free use of the knife in the near future.

Of the earlier plants sent home by Comber (Andean Expedition) a number were planted in an open field, and although the upper portion is sere and browned as a herbaceous plant would be, the lower portion is full of life and vigour; this does not include the Berberis, Escallonias, and Azaras, etc., sent home in the second year. They have not yet been planted outside.

A long list might be added of those plants which have proved hardier than their reputation, but as appearances are deceptive, and never more so than after a frost, that may be left until later. *J. Comber, Nymans Gardens, Handcross.*

PLANTS INJURED BY COLD AT LA MORTOLA.

On several occasions we have published lists of plants flowering in the open at Mr. Cecil Hanbury's garden at La Mortola, Ventimiglia. Now, unfortunately, the record is not so pleasing, indeed, it is one of damage done by 14° of frost and six inches of snow on February 20 last. The list is from Mr. S. Braggins, the Superintendent of the gardens, who made it out in March and states that all the plants listed have suffered from the severely cold weather, and those asterisked are very much damaged and in some cases killed.

*Acanthus arboreus, Achania mollis, *Adenium obesum, Acokanthera spectabilis, Agave albicans, *A. attenuata, A. caespitosa, A. flaccifolia, A. spectabilis and A. Willdingii; Agathaea petiolata, *Ageratum mexicanum, Aloe abyssinica, A. aculeata, A. affinis, A. arborescens var. frutescens, A. a. var. natalensis, A. a. var. Milleri, A. Brunnethaleri, A. Candelabrum, A. ciliaris, A. cyanea, A. Dyeri, A. globuligemma, A. grandidentata, A. Greatheadii, A. Hanburyana, A. Johnstonii, A. lateritia, A. latifolia, A. pendens, A. percrassa, A. Pienardii, A. pluridens, A. mortolensis, A. rubroviolacea, A. Salm-Dyckiana, A. sessiliflora, A. Simii, A. spinosissima, A. spec. from Kew, A. Straussii, A. succotrina, A. s. var. saxigena, A. wickensis, A. Winteriana and A. Thraskii; *Anona Cherimolia, Araujia megapotamica, Argyreia speciosa, Arundo Donax, Ardisia latifolia, Asparagus aphyllus and A. plumosus.

*Bauhinia grandiflora, *Begonia fagifolia, B. macrophylla, *B. manicata, *B. miniata, *B. semperflorens, *B. Rex and *B. weltoniensis; *Bignonia venusta, Bougainvillea glabra, B. Sanderiana, B. spectabilis and B. s. var. lateritia; *Bouvardia coccinea, *Bryophyllum crenatum, Buddleia madagascariensis and Bulbine aloides.

Caesalpinia tinctoria, Calycanthus occidentalis, *Canarina Campanula, *Cantua buxifolia, *Caralluma sp., *Casimiroa edulis, Cedrela sinensis, Celtis caucasica, *Cereus Quelichii, *C. triangularis and *C. urbanianus; Ceropegia Woodii, Cestrum aurantiacum, C. lanatum, C. nocturnum and C. suberosum; Chimonanthus praecox, Chlorophytum elatum, *Cineraria stellata, Citrus japonica, C. Aurantium, *C. Medica Cedrato di Firenze, C. m. var. multiforme, C. m. var. Limone di Catalogna and C. nobilis; Clivia miniata, Colocasia antiquorum, *Convolvulus floridus, Cordia Francisci and C. serratifolia; Cotyledon macrantha and C. orbiculare; Crassula lactea, C. portulacea, C. rosularis and C. rubicunda; Cussonia triptera, *Cyperus alternifolius and *C. Papyrus.

Dahlia Maximiliana, Datura arborescens, D. chlorantha and D. sanguinea; Dianthus Caryophyllus, Diplopappus fruticulosus, Dimorphotheca Ecklonis, *Dombeya Cayeuxii and D. Wallichii, *Dracaena Draco, Dunalia cyanea, Duranta Plumieri and D. inermis.

Echeveria gibbiflora, E. g. var. metallica, E. g. var. caruneulata, E. leucotricha and E. multicaulis; Echium callithyrsum, E. fastousum and E. formosum; Erythrina Crista-galli and E. insignis; Eucalyptus Globulus, Euphorbia abyssinica, E. aphylla, E. balsamifera, E. Bojeri, E. Erythraeae, E. grandidens, E. Hermentiana, E. mauritanica, E. parciramulosa, E. Schimperi, E. tetragona and E. Tirucalli.

Ferdinanda eminens, *Ficus comosa, *F. laevigata, *F. macrophylla, *F. religiosa and *F. scabrifolia; *Fuchsia arborescens and *F. triphylla; *Furcraea gigantea and F. Selloa.

*Grevillea Banksii, G. robusta and *G. Thelemanniana; and Gynura aurantiaca.

*Hebeclinium ianthinum and *H. macrophyllum; *Hardenbergia Comptoniana, Hedychium Gardnerianum and H. carneum; *Heliotropium peruvianum, *Hexacentris coccinea, Hibiscus heterophyllum, H. Rosa-sinensis and H. splendens.

Iochroma coccinea, I. grandiflora and I. lanceolatum.

Jacaranda ovalifolia, *Jasminum nitidum and J. officinalis.

*Kalanchoe marmorata and K. somaliensis; Kleinia amanensis, *K. Galpinii, and *K. neriifolia.

*Lavandula abrotanoides and L. dentata; Lantana Camara and L. lilacina, *Lippia citriodora, Lotus peliorrhynchus, and Lycium cestroides.

*Mackaya bella, Mesembryanthemum aequilaterale, M. deltoides, M. echinatum, M. pulchellum, M. rubricaule and M. serrulatum; *Monstera deliciosa, *Montanoa bipinnatifida, *M. tomentosa, and M. Wercklei; Muehlenbechia complexa and M. platyclada; Murraya exotica, Musa Basjoo, M. Ensete and *M. paradisiaca.

Odina caffra, Odontospermum sericeum, Olmediella Betschleriana, Opuntia megacantha variegata and O. Turpinii diademata; Oreopanax dactylifolium, and Oxalis cernua.

Pavonia spinifex, Paspalum dilatatum, Pelargonium athamanthoides, P. gibbosum, P. hybridum, P. inquinans, P. heterogamum, P. lateripes, P. peltatum, P. Radula, P. roseum, P. tomentosum and P. zonale; Periploca graeca, Persea gratissima, Phytolacca dioica, Pilea macrophylla, Plumbago capensis, *Pithecootenium buccinatorium, and *P. muricatum; Podranea Ricasoliana, Pontederia cordata, *Portulacaria afra, Pouteria laurifolia, *Primula sinensis, Psidium Araca, and Pteris longifolia.

*Reinwardtia trigyna, Reseda odorata, Rhapis flagelliformis, Richardia africana, Rosa Banksiae and *Royena pubescens.

*Salvia albo-caerulea, *S. amarissima, S. angustifolia, S. discolor, S. elegans, *S. Heerii, *S. involucrata, *S. leonuroides, S. mentiens and *S. Sessei; Schotia latifolia, Schutia buxifolia, *Satureia viminea, Sedum linearis, Sempervivum arboreum, S. Berthelotianum, S. canariense, S. chlorochrysum, S. ciliatum, S. cuneatum, S. decorum, S. giganteum, S. glutinosum, S. Haworthii, S. holochrysum, S. urbicum, S. velutinum and S. Webbii; Senecio angulatus, *S. grandifolius, *S. hadiensis, *S. Heritieri and S. Petasitis; Solanum aviculare, S. acanthocarpum, S. auriculatum, S. cyananthus and S. Warszewiczii; Sonchus Jacquinii, Statice brassicaefolia, S. fruticans and S. macrophylla; Stapelia Hanburyana and S. variegata; *Stenolobium alatum and *S. Stans; Strelitzia Augusta, and *Streptosolen Jamesonii.

*Tacsonia manicata, *Tecomaria capensis, Tetrapanax papyriferum, Toona ciliata, Tournefortia Messerschmidia, and *Tropaeolum majus.

Vitis quinquefolia and *V. Voineriana.

*Wigandia caracasana and *W. urens.

Zebrina pendula and Z. tricolor.

TREES AND SHRUBS.

DAVIDIAS FROM CUTTINGS.

THE article by Mr. Grove on Davidia involucrata (p. 182) proved of great interest to me, as, for several years I have been trying to propagate Davidias from cuttings, with the following results.

In the summer of 1925 I raised one plant of Davidia Vilmoriniana from a cutting made about three inches long, of thin wood, taken with a slight heel of older wood, from a seedling plant which was scarcely one year old. The plant in question was forming a "double leader," and the shoot removed—although by no means a promising cutting—was inserted in pure sand in a propagating frame having a temperature of about 65°, where it produced roots in late summer and was potted up, and grown on under glass until the spring of 1926. It was then planted in a nursery bed with other Davidias which had been raised from seeds sown in October, 1924. On measuring the plants to-day (March 9, 1929), I find the one raised from the cutting inserted in 1925 is two feet six inches high, while a seedling is four feet three inches. This, however, is not quite a fair comparison, for, as indicated above, the shoot inserted was not in the first place an ideal cutting.

On September 3, 1928, I had occasion to prune some four-year-old seedlings of Davidia Vilmoriniana, and instead of throwing away the prunings, I carefully severed them with a slight heel of older wood and inserted them in pure sand in a warm propagating frame having a bottom temperature of nearly 70°. On examination in the last week in September, 1928, four of these cuttings were found to be rooted, and have since become established in pots.

Although two of the rooted cuttings were so much as eight inches in length (Fig. 113) when they were inserted (that is about three or four inches above what is considered normal), I did not shorten them, and shall watch with interest the amount of growth they make in a period corresponding to that of the plant raised in 1925.

Regarding Davidia involucrata, on August 28, 1928, I inserted three cuttings taken from two small plants which were raised from layers. The cuttings were of the current year's growth, being thin shoots not quite three inches long, and made with a slight heel of older wood. These were inserted under the same conditions described for D. Vilmoriniana; and one produced roots and was potted on October 20, 1928, and at the time of writing it is commencing to make new growth.

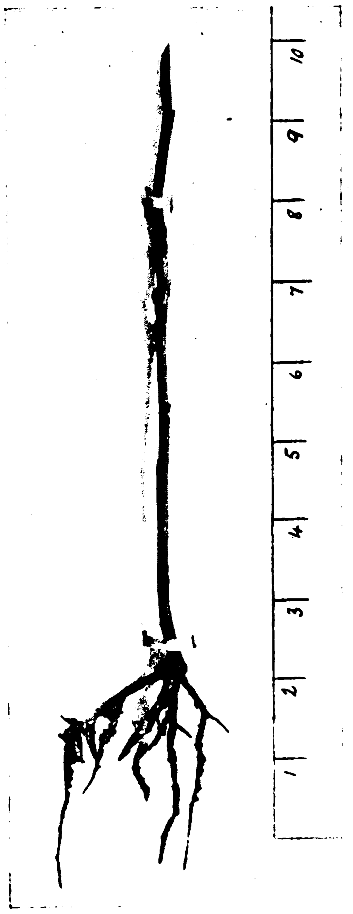

FIG. 113.—A ROOTED CUTTING OF DAVIDIA VILMORINIANA.

Inserted Sept. 3, 1928; photographed March, 1929.

Cuttings taken from adult plants growing in the open air have failed with me on every occasion, with both Davidia involucrata and D. Vilmoriniana, and I have never been successful in obtaining the type of wood I desired. The shoots available are altogether too thick, and it appears impossible in the ordinary way to get a young, thin side-shoot in July or August that has grown in one season directly from an older branch. Whether or not shoots of the required type would be developed after cutting back an older branch remains to be tried.

Previous to the appearance of Mr. Grove's article, I concluded that the only reliable way to raise Davidias from cuttings was to secure wood from young trees; this conclusion would appear to be borne out by the opening paragraph of his article, where he states that the first plants sent to England by M. Maurice de Vilmorin were raised from cuttings; these, therefore, could only have been obtained from the seedling plant at Les Barres, which was at that time only a few years old. *F. P. Knight, Kew.*

OLEARIAS.

THE Olearias, or Tree Daisies, consist of some thirty or more species of evergreen shrubs, natives of Australia, New Zealand and the adjacent islands, a few of which are hardy in all but the coldest districts, while most may be grown in sheltered positions in mild localities, particularly near the sea. They make neat, attractive bushes, and there is no group of evergreen shrubs that flowers more profusely, and its members are deserving of wide cultivation in our gardens. Moreover, their season of flowering extends from May until August and carries on a floral display after many shrubs have passed out of flower.

Probably the hardiest of the genus is the popular New Zealand species, O. Haastii, which may be grown with ease throughout the country, and produces a mass of small, white blossoms in July and August. A compact, slow-growing shrub, it rarely attains more than four or five feet in height in this country, but it succeeds under almost all conditions and is quite a good town plant. O. macrodonta is a tall and ornamental species with very attractive, broad, Holly-like leaves, and makes a beautiful object when laden with its broad corymbs of small, white flowers in June and July. A. arborescens (syn. O. nitida) is a handsome plant, its broadly ovate leaves being bright green, shiny above and silvery underneath, and the rounded corymbs of white flowers are borne freely in May and June.

O. ilicifolia, the mountain Holly of New Zealand, is a tall-growing species with linear-oblong or lanceolate leaves, which, in spite of the specific name, are less Holly-like than those of O. macrodonta, to which it is similar in habit. O. Gunniana (syn. O. stellulata), the May-flowering Tasmanian Daisy Bush, is a highly popular and very floriferous species, its pure white blossoms remaining in beauty for a long period. O. nummularifolia is an uncommon looking plant with stout, dense branches and peculiarly formed yellowish leaves, but the flowers are not borne in the lavish profusion common to the genus.

O. semidentata is an attractive, medium-sized shrub of silvery appearance, bearing large, solitary, rose-tinted flowers, but it needs the protection of a wall. O. insignis (syn. Pachystegia insignis) is a remarkably beautiful shrub for mild localities, although it is probably hardier than is usually supposed, at any rate, it thrives on the light, Surrey soils. The large, obovate leaves of this species, six or seven inches long, are clothed with a silvery-white tomentum, and the large white flowers, three inches across, are borne on stiff, erect peduncles.

THE MANAGEMENT OF IVY.

EARLY spring is the best time to plant, prune or dress Ivy, and the cutting of it on walls or buildings should not be done later than March. All vigorous-growing Ivies will send out branches away from the wall, especially as they grow older, and if the cutting back is done too late in the spring, the chances are that new growth has begun, the old wood fails to break evenly again, and bare spaces are left to be an eyesore all the summer. When Ivy is well attended to it will present a green and even surface all the summer, but when there are bare spaces exposing the old stems it shows that the management is not correct. It often happens that old established Ivies impoverish the soil in which they are growing, and the colour of the leaves becomes more yellow than green. Where it is apparent that the plants are insufficiently supplied with nutriment, steps should be taken to remove as much of the old soil as is practicable and replace it with a rich compost. Where such a course of renovation is not practicable, two or three dressings of an approved concentrated fertiliser, sprinkled on the surface and watered in, will assist the plants to regain their proper colour. The first dressing may be given early in April, following at intervals of three or four weeks until midsummer. *W. A.*

ERICA CARNEA VAR. WINTER BEAUTY.

Of all the Ericas, there are none quite so fascinating as the subject of these notes, as it commences to flower in November and continues until the end of March. The accompanying illustration (Fig. 114) shows a patch in the Heath garden, taken in December, when in full flower; it always attracts attention, and since it is an easy subject to establish in most soils, except, perhaps, those containing much lime, it may be recommended as one of the best of the family to plant now, at the end of its flowering period.

A Heath garden is, perhaps, one of the most fascinating parts of the pleasure grounds, and if planting is carried out in conjunction with various shrubs which flower at different periods, and also shrubs which are noted for their colouring in the autumn, a really cheap and beautiful form of garden is secured, and very little time need be spent in attending it, except to keep down weeds in the early stages of growth, and cutting back after flowering to avoid straggling growth.

It may be interesting to readers to know that the subject of these notes is planted on a mound of clay, and I have yet to see Ericas in a more flourishing condition. The site is in a wild part of the pleasure gardens, and very flat, so we decided to make a certain area undulating. The top spit was taken off and wheeled to the edges of the area, and during draining operations the whole site was transformed into miniature hillocks, rising and falling in a natural way, made by the clay carted from the drainage works. In due course the top spit was wheeled back, and some common peat, leaf-mould and sand used when planting was done in March. By a proper selection of varieties, the Heath garden may be of interest the whole year through.

I have been struck with the resistance of Erica carnea var. Winter Beauty against the exceptional frosts and bad weather experienced while in bloom; further, during bright sunshine large numbers of bees which have visited the plants indicate the value of this variety, when there is practically nothing else for them, and anything which will assist the bees at this time of the year is of very great value. *A. Falconer, Cheadle.*

BULB GARDEN.

CROCUS CHRYSANTHUS.

One of our most appealing little Crocus species is C. chrysanthus, a native of south-eastern Europe, which blooms, as a rule, from January to March, and was late this year, although fully in flower by March 5. Like the other Crocus species with smallish flowers, it is of more value in the garden than if it were larger, and I am at present enjoying the beauty of several lots kindly sent me by Mr. E. A. Bowles, whom we all recognise as the authority on Crocuses. Mr. Bowles has been most successful in raising new seedlings of C. chrysanthus, and his skill in detecting the best of these has led to their being given varietal names. The typical form has rich yellow flowers with yellow or scarlet stigmata, but there are forms of varied colouring, such as C. c. var. caeruleus, white, tinted charmingly with blue; and var. albidus, white with a blue base. Two of the older ones, both very pretty, are C. chrysanthus var. fusco-tinctus, with yellow flowers, suffused with brown on the exterior; and C. c. var. fusco-lineatus, also yellow, but striped with brown on the outside. Of the new varieties, most of which have been raised by Mr. Bowles, one named E. A. Bowles, a fine butter-yellow, is lovely; var. Large Warley, is white, dark purple outside; C. c. var. Moonlight is sulphur with a purple base; C. c. var. Zwanenburg Bronze, deep yellow, bronze exterior, was raised in Holland, I believe; C. c. var. Canary Bird, scented and canary-yellow; C. c. var. Snow Bunting, a fine white; C. c. var. Bumble-bee, yellow, brown outside; and such varieties as Quaintness and Tom Tit. These and some unnamed seedlings were a great delight in early March, this year.

CROCUS SIEBERI.

Although there has been in progress for a number of years a growing appreciation of the beauties of the Crocus species and their varieties apart from the large-flowered Crocuses colloquially known as the "Dutch," and varieties of C. vernus, there is still an opening for a more widespread appreciation of their value in the garden. Worshippers of size are not likely to share in this appreciation, but to the many who can admire these delightful flowers, it may be stated they open up for them a new field of enjoyment. A considerable number are comparatively expensive and cost rather a large sum if planted by the dozen or hundred, but a proportion of lovely sorts are cheap enough without making an undue strain upon the resources of the would-be purchaser. One of these, Crocus Sieberi, is quite reasonable in price, and it flowers so early and is so attractive that it will be generally appreciated.

C. Sieberi hails from the Greek mountains and Archipelago, whence it was introduced in 1831. It has a roundish perianth, which is bright lilac, with a vivid yellow base and a beardless, orange throat, orange stamens and orange-scarlet stigmata. This species has also been called C. similis and C. nivalis. There is a very rare and beautiful variety which the writer would be delighted to possess again. This varies in colour from white to purple, with a rich golden-yellow base, and is feathered or veined with white and purple. The variety C. S. purpureus is deep purple, and is also rare in cultivation.

Compared with the Dutch varieties, C. Sieberi is small, but this is a gain rather than a defect, as it is better able to withstand the stormy weather generally experienced in February, when it comes into bloom. A large Crocus would be ruined in beauty in weather in which C. Sieberi would suffer little. This year it encountered exceptionally hard frost, then rain; then a dense mist at night, with frost in the morning and brilliant sunshine during the day. This indomitable little Crocus appeared to suffer little, and has been flowering freely, and is still (March 9) in full beauty.

Corms may be procured in early autumn and planted at once, about an inch deep in light, and half-an-inch in heavy soil. It is figured in Maw's *Monograph of the Genus Crocus*, t. 33, and in the *Botanical Magazine*, t. 1043 and t. 6036. *S. Arnott.*

FRITILLARIA LATIFOLIA.

This very variable species may, with decided advantage, be more frequently employed for naturalising in open woodland, in grassland and on the large rock garden; the sturdy stems are about one foot high, the pendulous flowers being comparatively large and of fine texture. The colouring of the blooms is fairly comprehensive and ranges from black to brown, purple, lilac and yellow, with many wonderful mottlings and chequered designs. I have had flowers with a rose-pink suffusion, and greys and yellows indivisibly confused—intriguing and very pretty, and really delightful.

Some years ago many named forms of F. latifolia were offered, and I retain recollections of Black Knight, Caroline Chisholm, Rembrandt, Van Spyk and Masia Goldsmith; these have, in all probability, long since disappeared, but an appreciable number of bulbs will produce a wonderful variety of flowers.

F. latifolia is very attractive when grown in pans or pots, and will thrive in almost any ordinary good, well-drained soil. It was introduced from the Caucasus so long ago as 1603, and its quaint beauty is worthy of a greatly extended recognition. *Ralph E. Arnold.*

FLORISTS' FLOWERS.

INTERMEDIATE SWEET PEAS.

The comments upon William Bateson (p. 62, January 26), were read with interest, but there appears to be some error in regard to intermediate forms of Sweet Peas. There is—or was—an intermediate type known as "bush," although I am not sure that any examples survive for the type was shy flowering, and of little value. During my residence here, I have never seen, or heard, reference to this type. I have not consulted my records, but the "bush" Sweet Peas were introduced, I think, some three or four years after the Cupids, by Messrs. W. Atlee Burpee and Co. Like the Cupid strain, the bush type appeared in California, and both came out of the tall type, before the advent of the Spencer, or waved, type. It is not unlikely that the bush type appeared unseen before the Cupids, although the latter were introduced first. On the other hand, the bush strain may have been the result of the influence of the Cupids, but it was never so stated. Without a doubt, these dwarf and semi-dwarf types appeared as a result of the persistent crossing, as did the hooded types, the Spencer and the Unwin types, and the newest multi-flowered type among the early-flowering kinds.

I may add that this multi-flowered type has this season made an appearance in a New Jersey grower's greenhouse, two or three years later than it showed itself in Canada. The advent of this multi-flowered type will assuredly mean beginning all over again, as was the case when Countess Spencer appeared, for no one will want to grow Sweet Peas producing only one flower stem from each leaf axil, when varieties producing two and three stems become available. *T. A. Weston, U.S.A.*

MOISTURE CONSERVATION BY MULCHING.

Having a very light, gritty soil, the drainage being further accelerated by a sharp slope, various means—of which the watering-can is not one—have to be employed to retain moisture during summer. Among these the mulch takes the foremost place. Going to work on the basis that there is almost always, even in the driest of soils, a constant upward flow of moisture from below, the business of the mulch is obviously to capture and retain that moisture before it is dissipated by coming in contact with the air. The principle is not a new one. Indeed, one of the oldest factors employed in agriculture for the conservation of this moisture is the dust mulch. With hoe, harrow or other tool, the land is repeatedly worked while in a friable condition until its surface is converted into a layer of soil so dry and finely-broken that it effectually prevents the evaporation of any moisture rising from below. In hot, almost rainless, countries, many crops have been, and are still being, successfully grown on this "dry-farming" principle, and every practical gardener is so fully cognisant of its value in maintaining growth during long dry periods that nothing more need be written on that point.

There are, however, many occasions upon which hoeing as a means of moisture conservation cannot be practised. Further, there are some soils which, dry as they may be, do not respond to such treatment. In such instances one adopts other measures, and one of these consists of mulching with some retentive material. In much of my own garden this system of top-dressing against the menace of drought is practically always going on, but early spring is its "high season." Shrubs like Rhododendrons and others often classed as peat plants, would stand a poor chance of succeeding in my light, sharply-drained slope were it not for this annual, or biennial, application.

The mulch may consist of half-decayed leaves, leaf-mould, decayed vegetable refuse, Seaweed for such as like it, old farmyard manure, spent Hops or peat moss, and the best of all these, as a moisture retainer, is the last. Like Sphagnum-moss, of which it is usually very largely composed, this form of peat does not only absorb water like a sponge, but holds it. I have tried all manner of things with that object in view, but nothing else has ever approached granulated peat-moss as an absorbent and moisture retainer. Moreover, this material is most extraordinarily resistant to decay, even when dug into the soil, and as a mulch it will long outlast anything else of the sort. It also possesses the great advantage of being free from weed seeds; insect pests dislike it; it is light and pleasant to handle, and birds do not scatter it as it contains no food.

Peat moss, before being used, is heaped-up outside for a few months and turned over once or twice. This breaks it up if lumpy, and it is in a better condition for use as a mulch after being converted into the semblance of a cool, damp mould. This weathering is stated to modify its rather high acid content, which may be advantageous in treating some subjects. Peat moss I mostly use alone, but it is sometimes mixed with leaf-mould or vegetable compost both for underground and as a top-dressing, especially for such Ericaceous and other subjects as need coolness at the roots.

By employing a mulch for the absorption and conservation of moisture one is, of course, only following what has been a process of nature since the world's vegetation began. From the same source many other practical hints of the kind may be gleaned, and one of these is what may be termed a living mulch. Just as turf and other herbage checks evaporation in the wild, so the gardener can grow mat-forming plants to serve the same end. Some of my slopes, for example, were so dry that they would not support Azaleas and, the pitch of the ground being steep, top-dressing had to be abandoned, for all the material was very soon at the bottom. But by covering the ground with some of the flat-growing Ericas, these speedily formed a most efficient check to evaporation. The soil beneath them was always cool, they gathered their own and other leaf-fall, and became the means of conserving moisture and humus.

Such a principle is, of course, applicable not only to the larger but also to the smaller subjects. Mr. Clarence Elliott's alpine lawn, for instance, demonstrates how lowly carpeting plants of dense growth will cover a thin, sun-beaten soil in which most others of a tufty nature and set apart from one another would languish from drought. This they are enabled to do by reason of the fact that they are themselves their own living mulch. Their blanket of verdure checks that surface evaporation alluded to, and so conserves sufficient moisture for their existence. Thus the same principle is pursued, the same end attained, in whatsoever form moisture conservation may be practised; and the discerning gardener will readily discover a dozen methods of putting it into application. *J.*

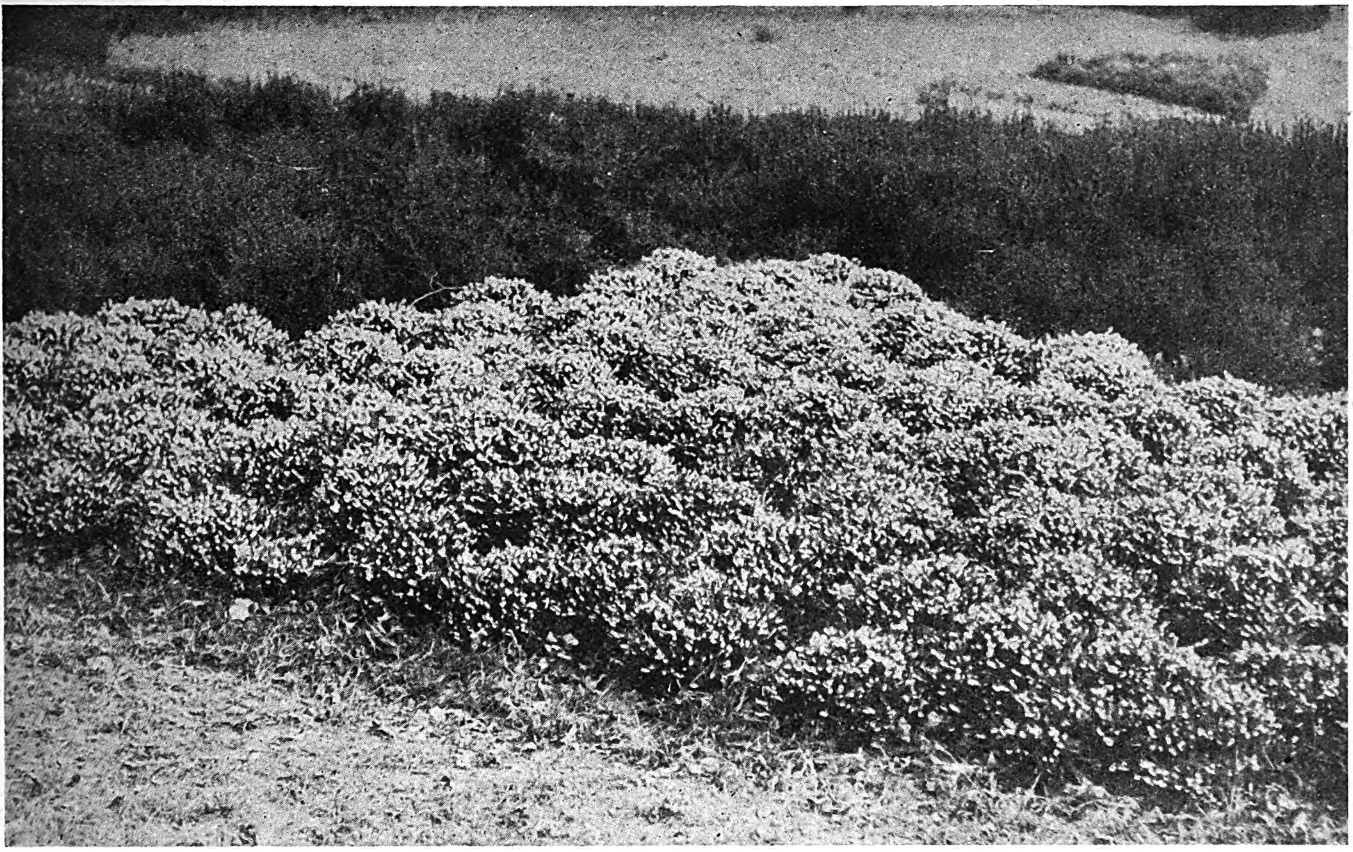

FIG. 114.—ERICA CARNEA VAR. WINTER BEAUTY AT THE ROYAL MENTAL HOSPITAL, CHEADLE.
(see p. 228).

TREATMENT OF SUGAR BEET SEEDS TO PREVENT SEEDLING DISEASES.

SUGAR Beet seeds, as will be seen, are seldom free from disease, and it is for this reason that some of the Continental countries have adopted various processes of seed disinfection. As seed dressings for Sugar Beet had not been tested for English conditions, the subject has been under investigation during the past three years, and the results are here outlined.

ORGANISMS RESPONSIBLE FOR SEEDLING DISEASES AND THE DAMAGE THEY CAUSE.

The parasitism of underground portions of seedlings by the fungus Phoma Betae, is stated to be mainly responsible for a poor "plant" establishment. This diseased condition of the roots of Sugar Beet seedlings is commonly and descriptively referred to as "blackleg," but this term also embraces injury caused by other fungi, such as Pythium de Baryanum and Aphanomyces laevis or by their combined effects. The damage caused by the Mangold pigmy beetle (Atomaria linearis) may be confused with the disease caused by blackleg organisms, as the attacks on the young seedlings by blackleg and by the beetle, usually occur at about the same time. The early symptoms of attack by the latter, however, may easily be distinguished from blackleg by the small excavations that the beetle bites out from the stem of the seedling just below ground level. Such seedlings, however, may eventually succumb to blackleg. The general symptoms of blackleg on the young seedlings are the appearances of disease lesions on the young stems at, or just below, soil level; these increase in size, become brown in colour, and finally cut off the water channels and in this way cause rapid wilting and death. If such plants are examined a black constriction at soil level is noticed, and the young root often becomes characteristically threadlike. If the plant is older and more vigorous when attacked it may recover; in this case the water supply is not completely cut off, and the diseased tissue is confined to the outer layers until it is finally thrown off. The damage done depends largely upon three factors, namely, the condition of the seed bed, the weather, and the infection of either the seeds (as shown by the presence of pycnidia of the fungus), or of the soil. To determine the extent of infection of commercial seeds, the varieties of Sugar Beet seeds were taken at random from twenty-six samples representing most of the English and Continental sources, and were examined at the Official Seed Testing Station, Cambridge. The infection of the seeds, *i.e.*, seeds which produced growth having disease lesions, varied between 44 per cent. and 89·5 per cent. The damage done by such infection of seeds when ideal conditions for fungus development obtain was demonstrated when seeds were sown in large boxes in unsterilised soil in a greenhouse. Approximately ten per cent. of the seedlings appeared above ground; of the remainder below ground approximately sixty per cent. showed signs of blackleg. In the field a large loss of plants frequently occurs when environmental conditions favour the disease.

TRIALS WITH VARIOUS SEED DRESSINGS.

About ten materials were tested, including two proprietary materials containing organic mercury, and one proprietary material containing organic arsenic in powder form for dry treatment of the seeds. One of the organic mercury materials gave outstanding results, and more exhaustive tests of this material were undertaken, and the results obtained were compared with the dressings of carbolic acid applied by both the sprinkling and steeping methods. The mercury material increased the plant in numerous trials in Northampton, Oxford and Cambridge by fifty per cent., and not only so, but the plant was stronger, as shown in one of the trials by an increased dry and fresh weight of 6·9 per cent. and 11·4 per cent., respectively. The results obtained with carbolic acid and with the dry treatment were not so uniformly beneficial, the former being distinctly harmful on a number of occasions.

The mercury material was the most effective substance used in reducing the number of diseased growths. In the examination of ten varieties of seeds it was found that there was a direct correlation between the intensity of infection of seed samples and a corresponding increase of plant in response to treatment with this dressing. No injury to the seeds or plants has been observed, but on the contrary, a definite benefit has usually been derived.

Trials to estimate the effect of the dressings on yield on the percentage of sucrose were undertaken in 1928. The results did not show a significant increase in yield or an increase in the percentage of sucrose, although the seeds receiving the mercury treatment produced, after singling, more roots per acre than the carbolic treatments, the organic mercury treatment, or the control. The explanation of this is that this seed dressing made the greatest reduction in the number of misses or gaps in the rows. Because of favourable climatic and seed-bed conditions for the seedlings, the disease, although present, was not severe in these trials (and there were few reports of its occurrence elsewhere) so that, for the season in question, its effect on yield was not shown under conditions which favoured the disease. As is well-known, a poor plant of Sugar Beet is of seasonal occurrence and is due, to an extent, to conditions which favour the pathogenic activities of the seed-borne organisms.

There seems to be little doubt that efficient disinfection of the seeds would be of great value in repressing seasonal outbreaks, and in this way act as an insurance against a plant failure in seasons unfavourable to the seedlings. Furthermore, it seems probable that the optimum plant would be established in the field, other conditions being favourable, if it were possible to judge more accurately the amount of seeds to be sown per acre; this assuredly would be made more simple by using either disease-free seeds or treated seeds, as then much would be accomplished towards assuring an even and satisfactory plant by eliminating the effects of that unknown factor, the presence of disease on the seeds. The optimum plant is of considerable importance, for it must be pointed out that too thick a plant, as well as too thin a plant, both exert an adverse effect on yield. The less obvious, although none the less serious effect of too thick a " stand " is to reduce the vigour of the plants before singling by over-crowding in the row.

In conclusion, it cannot be stated that such treatment of seeds would always result in an increased yield, but there is always the possibility that under conditions favourable to seedling diseases the yield would be increased as the result of the seed dressing and, conversely, would be considerably reduced if diseased seeds were not dressed.

The material in question is easily applied, is inexpensive, and requires no special equipment if the grower prefers to treat his own seeds. One gallon of water, in which five ounces of the material has been dissolved, is sufficient to wet 50 lbs. of seeds. An old, disused churn may be used in which to thoroughly mix and wet the seeds which have been sprinkled with the solution, or a watering-can with a fine rose will be found useful in applying the solution to the seeds spread on the floor. The seeds should be thoroughly and rapidly mixed to secure even wetting. The damp seeds are then spread out to dry, which process is a short one owing to the absence of any superfluous fluid. Alternatively, the rate of application is 125 grams of material, four litres of water, to be applied to twenty kilos of seeds. This season, English growers may obtain dressed seeds from some of the factories on the payment of a small premium. Owing to the very poisonous nature of mercury, care should be taken to avoid contaminating utensils used in feeding stock. *R. C. Woodward, B.Sc. Ph.D. (Cantab.), and W. A. R. Dillon Weston, M.A. (Cantab.).*

THE OENUS PRIMULA.

(Continued from p. 207).

LUTEOLA (Rupr.). Yellow Bird's-eye P. (Farinosae.)

A very attractive perennial species with a rosette of smooth, non-mealy, membranous leaves from four to eight inches long and three-quarters- to one-and-a-half inch wide, with lanceolate-elliptic, blunt blades, tapering to a distinct stalk; margins toothed; both surfaces more or less smooth, non-mealy. Flower stem fairly stout, four to seven inches tall, mealy upwards, bearing a dense, many-flowered umbel of pale sulphur-yellow blossoms. Corolla about five-eighths-of-an-inch across; lobes broadly heart-shaped; tube cylindrical, twice as long as the calyx. Flowers in August. Introduced in 1867.

Grows in moist mountain pastures in the eastern Caucasus and the mountains of Turkestan and Daghastan, reaching an elevation of 4,200 to 9,000 feet above sea-level.

Culture: As for P. japonica.

MACLARENI (Balf. f.). Maclaren's P. (Cortusoides-Geranioides.)

A handsome, deciduous, perennial species with a stout, branched, elongated, underground root-stock and oval resting buds covered with a few reddish-brown, hooded scales. The tufts of erect, bright green leaves have kidney-shaped or nearly circular blades about three inches across, blunt at the tip, heart-shaped at the base, borne on a rounded, hairy stem up to four inches in length; margins cut into seven to nine shallow, triangular, pointed, more or less toothed lobes, the teeth ending in a distinct, sharp point; both surfaces covered with glandular hairs. Flower stem up to twenty-five inches tall, covered with glandular hairs and bearing two or three super-posed umbels of rich crimson blossoms, with a yellowish, or yellowish-green eye, bordered with a deep magenta ring; they are borne on short, down-curved stalks. Corolla flat, about three-quarters of-an-inch across, with broadly heart-shaped or wedge-shaped, deeply bifid segments, with a tooth in the cleft; tube cylindric below, dilated upwards, with a ten-lobed ring in the mouth. Flowers in June. Introduced in 1915.

Grows among strong-growing grasses in valleys, in the Province of Whanghaido, in central Korea, at about 4,000 feet above sea-level.

Culture: Good, rich loam, in a cool, damp spot, with protection from damp and severe frost in winter, should suit it.

MACROCARPA (Maxim.). Large-fruited P. (Farinosae.)

A dwarf, small-flowered, Japanese species with a tuft of sub-diamond-shaped or diamond-shaped-spathulate, thin leaves, tapering gradually to a broad, winged stalk, in all from three-quarters of-an-inch to two inches long; margins towards the tip furnished with sharp, saw-like teeth; both surfaces smooth, non-mealy. Flower stem one inch to three inches tall, smooth, bearing a loose umbel of one to five white blossoms with a yellow throat. Corolla about three-eighths-of-an-inch across, divided into five broadly heart-shaped, deeply cleft lobes; tube not exceeding the calyx in length, cylindrical below, dilated upwards. (Illustrated in *Notes from the Botanic Gardens, Edinburgh*, 1913).

Grows in damp places on the mountains of Nippon, Japan, reaching an elevation of 4,500 feet above sea-level.

Culture: Plant it in fibrous loam and sand, in a damp half-shady spot.

MACROPHYLLA (Don). Large-leaved P. (Nivales.)

A handsome, robust, perennial species with a large tuft of broadly lance-shaped leaves, blunt at the tip, gradually tapering to a winged stalk dilated at the base, in all from three to ten inches long; margins furnished with distant, rounded teeth; upper surface more or less smooth, underside coated with white or yellow meal. Flower stem stout, mealy upwards, bearing one or two superposed umbels of pale or deep purple blossoms. Corolla nearly one inch across, with heart-shaped, rounded lobes; tube funnel-shaped, twice as long as the calyx.

Grows in damp mountain meadows in rich soil, in the Kumaon Himalayas.

Var. leariloba (Hook. f.). In this form the lobes of the corolla are narrow, deeply divided into two narrow, spreading lobes. Tibet, north of Sikkim.

Var. macrocarpa (Hook. f.). The leaves of this variety are broadly lance-shaped, blunt or pointed, two to five inches long, mealy beneath. Sikkim Himalayas, about 5,000 feet.

Culture: Good, rich friable loam and grit, in a damp, open position, is indicated.

MACROPODA (Craib). Large-podded P. (Petiolaris-Davidii.)

A little-known species from Szechuan, in western China, with a thick, woody rootstock which produces a tuft of elliptic or oblong-elliptic, rigid, papery leaves about six inches long, rounded at the tip, shortly wedge-shaped at the base, with the margins decurrent down the slender stem which equals the blade in length; both surfaces non-mealy, more or less smooth except on the midrib, where there are long hairs; margins furnished with blunt teeth or rarely small lobes fringed with minute hairs. Flower stems up to about seven inches tall, bearing an umbel of about seven blossoms, of which the colour and shape has not been recorded as the plant has only been gathered in fruit.

Culture: This species, which is not in cultivation, would probably succeed under the same cultural treatment afforded to other members of the section to which it belongs. *A. W. Darnell.*

(To be continued).

NOTICE OF BOOK.

Mesembryanthemum.

Since Vol. II of the *Flora Capensis* was published in 1861-2, there has been nothing in the literature of South African Mesembryanthemum at all comparable in wealth of observation and descriptive detail to the *Notes*[*] in which Mrs. Bolus has collated many of the papers she has communicated on the subject to the South African horticultural journals. For many years Mr. N. E. Brown has been engaged on a critical investigation of Mesembryanthemum, and has segregated it into many genera, thus confirming the suspicions of Haworth—the Nestor of Sarcophytology—regarding the composite nature of the genus. Mr. Brown's conclusions, which have been published in *The Gardeners' Chronicle*, together with those reached by other workers in the field, like Professor Schwantes, Dr. Karl

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[*] *Notes on Mesembryanthemum and Some Allied Genera*, by H. M. Louisa Bolus, Hon. Curator Bolus Herbarium. Part 1, pp. 1-135, with twenty-one illustrations in colour and numerous figures in black and white. Speciality Press of South Africa, Ltd., 1928 (price not stated).

Dinter, and especially Mrs. Bolus, have led to the recognition of many novel genera, including **Nelia**, **Dorotheanthus**, **Carpobrotus**, **Lithops**, **Pleiospilos** and **Dinteranthus**, with embarrassing results to those systematists, who, trained like the writer in the *Flora Capensis* tradition of the genus, find their views obsolete.

Singularly fortunately placed for study of Mesembryanthemum, Mrs. Bolus has brought her well-tried faculties for critical observation into play in regard to scent and colour of the flowers, and their duration; the flowering period generally, pollenating agents, and many other points which escape the notice of all but acute observers in the field; if, therefore, her conclusions with regard to nomenclature are not always acceptable, the value of her observational work is not diminished. The book gains by the inclusion of numerous photographs of living plants and carefully drawn dissections of nearly all the species referred to, and if the coloured plates lack some measure of the brilliance of the veld flowers, the cause must be sought in the process of reproduction employed.

Botanically, the formal description of one hundred new species, which have a chapter to themselves, is of importance, as is the key to the genera of Cape Mesembryeae. There is an adequate index, and few misprints have escaped correction; but the systematic omission of reference to literature and authorities, as well as the irregular insertion of authors' names for new combinations, does not make for clarity in the pursuit of the synonymy.

The *Notes* will fill a long-felt want in schools, universities and herbaria in South Africa, and should help to foster interest in these diverse Succulents which, incidentally, have a place in the agricultural activities of the Union. *C. A. Smith.*

HOME CORRESPONDENCE.

Some Exhibition Experiences: and the late Mr. John Cypher.—Horticultural exhibitions are inaugurated as a means of supplying the public with something spectacular as well as educational, and certain societies recognise the fact that unless they obtain good exhibits their shows would not exist, consequently they go to some trouble to secure fine displays. Such committees do all they can to make exhibitors and their assistants comfortable, by making arrangements for transport to and from the station, providing breakfasts, sometimes a lunch, or dinner, where all may meet together and enjoy the hearty welcome which is so much appreciated. These notes are written with a view to emphasize the value of exhibits and exhibitors, and to encourage employers to allow their gardeners to exhibit, as it is a means of making a man strive to produce everything as near perfection as possible; it is also a means of gaining further experience. The man who is always kept within the walls of his garden will soon fall behind his fellow men. There is no other craft where the true spirit of comradeship is so fine as among horticultural exhibitors. As an instance, a certain exhibitor was held up on the railway and arrived at the show ground only a short time before judging should commence. Was he left in the cold? Certainly not. His friends and fellow competitors in the same class helped him to unload and stage his exhibit; and he won! Only those who exhibit know the time, study and forethought entailed to bring exhibits to shows, and sometimes the real hardships endured in bringing the produce to the standard that finds favour with the judges and the public. There are long hours of work, long journeys, and often little sleep. Those exhibitors who have large plant vans often use the van as an hotel, as it is often difficult, and sometimes inconvenient, to obtain accommodation for sleep and meals; they make their own comfort, and a friend is welcomed with refreshment ofte when this is very acceptable. One exhibitor caused some comment by installing electric light in his van and giving his address as the Hotel de Van. A visitor to the show made repeated enquiries in the town for that address! The late Mr. John Cypher, whom everyone loved so well, was really the first to use his van as his hotel; now nearly all the leading exhibitors adopt this plan, which brings me to the most important part of my notes. At the great Shrewsbury Show in 1928, during the reception of exhibitors and judges, due respect was paid to the late Mr. John Cypher, and many memories recalled, but, unfortunately, the exhibitors did not get a chance to put forward a scheme to perpetuate the memory of this great exhibitor, with the result that notes have appeared since in *The Gardeners' Chronicle* respecting it, and while the writer at first favoured the scheme put forward (see *Gard. Chron.*, November 24, 1928, p. 403) and was one of the writers, he has been very impressed with the views of Mr. Barnes (*Gard. Chron.*, January 5, 1929, p. 17), but there does not seem much enthusiasm on the matter to date, which is to be regretted. There is no doubt that the originator of such artistic displays of plants and flowers should have his memory honoured in a suitable way, and if there is one kind of exhibit which deserves special recognition it is that of the large group class, and it is only those men who stage them, and men like Mr. Barnes, who know the work entailed the value of such exhibits, as instanced by the Group Avenues at Southport and Shrewsbury, and their educational value to the general public. I could relate many interesting and humorous experiences, but these notes are written for the purpose of inviting all lovers of horticulture to subscribe to some fund such as has been suggested, to provide a lasting memory to one of the best exhibitors I have ever known, and one who always set a good example. *A. F.*

Lapagerias.—In reply to *W. P. W.* in your issue of February 23, I well remember the Lapagerias at the Royal Exotic Nurseries, Chelsea, as I was employed there at the time of the International Exhibition held at Kensington. I then went to Sion House, Brentford, and was there when the first Cocoanut Tree fruited and came to perfection in this country. The head gardener was presented with a Gold Medal in commemoration of the event. *E. Wills, Southampton.*

Freesias—Mr. Dalrymple (p. 166) desires to meet someone who knows Freesias in their native land. I cannot help him in that respect, but I spent ten years gardening in Australia, where I planted some Freesias on the edges of a flower border in my own garden. In four years they had increased so rapidly that they were growing like weeds all over the garden; not only did the corms multiply, but the plants seeded profusely. The Freesias thrived and flowered on hard, dry, gravel walks. As the soil was sandy and exceptionally hot and dry during the summer one would not expect anything to grow, yet, after the rainy season, they would commence to grow and flower, their strong scent being almost overpowering. They did not grow more than nine inches in height. Regarding culture here, your correspondent is correct. Freesias require water only when the soil is getting dry. They are not lovers of moisture. A light, sandy soil without manure or leaf soil would suit them best, gradually drying them off after flowering, and then placing them on a shelf near the glass, withholding water and giving them a baking in the sun until about August, when they should be repotted again. *H. Aldis, Lowestoft.*

Mistletoe.—In his introductory notes to *li abecés par ekivoche*, of Huon le roi de Cambrai (*Classiques français du moyen age*, Paris, 1925), in regard to the letter Y, M. Langfors quotes the existence of a manuscript, in which, opposite this letter, a scribe has made the marginal note "*gui*," of the pronunciation of which some doubt exists; further, that ancient tradition, which has been ascribed to Pythagoras, accords the letter Y as a representation of the two ways of human life—the parting of the good and the bad. Also that the letter has the significance of, and bears the name of, the Son, as in the cypher ΠΥΑ (Father, Πάτηρ; Son, Υἱός; Holy Ghost, Ἅγιον Πνεῦμα), *e.g.*, in some old Venetian scripts. Now "*gui*," which derives back from the Latin *viscum*, is the French word for Mistletoe. This association, for it hardly amounts to more than that, of a Y-like form, which is so marked a feature of the Mistletoe, with a religious significance, is, perhaps, not without interest. While many pre-Christian emblems or rites have passed on with a gap in their sequence, here, perhaps, we have a case where new links have been forged to make a complete chain. *H. E. Durham.*

Gardeners' Pay and Status.—I have been a gardener since 1886, and gained experience in well-kept gardens and nurseries, but I see little prospect for young men when 45s. per week with cottage is offered a practical, and experienced gardener, who is expected to grow first-rate Grapes, Peaches, Melons, Strawberries, Cucumbers, Tomatos and all kinds of flowering plants; keep a large house supplied with vegetables and salads all the year round, and maintain a large pleasure ground. I find myself handicapped with unskilled under-gardeners, as the long hours, stoking, etc., do not appeal to young men. I find gardening a very interesting occupation, but it is "all work and small pay." *H. P., Staffordshire.*

——I was very interested in the remarks of *B. C.* published in *The Gardeners' Chronicle* of March 9, p. 190, and judging from my own experiences, I think that it will be a hard matter for anyone to get much nearer the mark. What is the use of learning a trade if one is to receive the same treatment as an unskilled man? Who would expect a builder to pay casual labourers the same wage that his best bricklayers were earning? Yet this is exactly what many gardeners have to endure. Is it to be wondered that many young men are losing a genuine love of the work, when they have a constant struggle to exist? The wages they receive do not enable them to live comfortably. The "take it or leave it" style seems to be a pretty common complaint, and yet men are expected to "jump about" and keep things going under these very unfair conditions. I am sure that a live Professional Gardeners' Association would be a means whereby skilled men would receive recognition. *Another Young Gardener.*

Frost Injury to Apple Trees.—I find that I have only one tree (Lane's Prince Albert) split right down the stem by frost, as described by Mr. T. Wallace (p. 209); but there are small cracks in a good many others. In the winter of 1916-17 we had much more of this damage, as recorded by my father (*Southern Grower*) in *The Gardeners' Chronicle* of April 14, 1917, as follows:—"For the first time, I find slits caused by frost in the bark of many Apple trunks from a foot to two feet in length, and about half-an-inch deep. The trees most affected are those which are not over eleven years from the planting, and full of vigorous growth. The proportion of trees with these splits is not large—not over one in twenty in any variety. Cox's Orange Pippin is one of the most commonly affected varieties, as might be expected, seeing that it rarely misses anything that is going about." The splits on that occasion were always on the south side of the tree. No harm resulted, except that woolly aphis massed in the splits and needed attention for a year or two. *Market Grower.*

Salix lanata var. Stuartii.—The correspondence on this Willow (pp. 60, 107, 159, 208) has been of more than passing interest. The few notes I have been able to cull on the subject may be helpful. So far, I have not been able to find any support for the name S. lanata var. Stewarti, nor does S. lanata var. Stuartii appear to have found favour. Salix Stuartiana is figured in *Eng. Bot.* (Vol. XXXVI, t. 2,586), to which the following is appended:—"The Rev. Dr. Stuart, to whose name we dedicate this Willow, first gave us a specimen of it in August, 1782, from his garden at Luss, as the male plant of Lightfoot's S. lapponum, which is the Linnean arenaria, see t. 1,809. He found it in Breadalbane, where Mr. W. Borrer has since gathered our wild specimen, near the upper end of the Finlarig Burn." An exhaustive description follows. Referring to more recent work, I find Dr. Moss in *The Cambridge British Flora* (may one express the hope that this wonderful work will be completed ?) supports the above and tells us it was named after the Rev. Dr. John Stuart, of Luss, Dumbartonshire, but gives it as a synonym of S. lapponum, L., a view which is supported in the *Kew Handlist of Trees and Shrubs*. Dr. Moss gives S. lanata × lapponum as a distinct plant from the above. Should the plant referred to on p. 208 of *The Gardeners' Chronicle* prove to be this hybrid from Aberdeenshire, and as the plant has found its way into the trade (p. 159), it is to be hoped Mr. Fraser will be successful in his efforts, and that the plant will receive an authentic name. *J. Blades.*

FOREIGN CORRESPONDENCE.

HIPPEASTRUMS OUT-OF-DOORS.

THE illustration (Fig. 10) and note (p. 27) relating to Hippeastrums out-of-doors in Kenya Colony prompts me to mention that the commercial culture of these bulbs is now carried out on a big scale in various parts of Florida and California. The growers, in most cases, started out with Kerr's and Veitch's finest named sorts, and have since, by crossing, extended the range of colours. Strong bulbs are easily raised in about three years, and to-day, nearly all seedsmen offer dry bulbs during the winter at reasonable rates. The wholesale dealers offer first-class strains at around $35 (£8 10s.) per hundred, while the usual retail price is about three shillings each. Vast numbers of bulbs are sold, the greenhouse men, in not a few instances, growing the flowers for cutting. Named sorts are not offered, as propagation by offsets is naturally slow. Being so easily crossed and growing so readily out-of-doors, it is not surprising that considerable variation exists, and, as might be expected, some growers make great claims for their Hippeastrum strains. Certainly, some of the blooms are immense, although rather coarse. Some, as a result of cross-breeding, show a tendency to crop more than once in a season.

The chief of the Agricultural Department greenhouses at Washington, D.C., has for a number of years done much breeding of Hippeastrums and each year a public exhibition of many hundreds of plants is given and, usually, one or two seedlings are named after notable persons. This Government collection is stated to be the finest in the world; I have not seen it, but, as it was originally started from the finest English varieties, I do not doubt that it is good, as Superintendent Byrnes has, naturally, only retained the finest of his seedlings. The collection is stated to contain some fine pure white sorts. *T. A. Weston, New Jersey, U.S.A.*

THE NATIONAL IMPORTANCE OF FRUIT-GROWING.—I .

(*Concluded from p.* 211).

IT is proposed in this final article generally to survey the position of English fruit-growing, to look at it from the point of view of the specialised fruit grower, and of the general farmer, and, if possible, to show the likelihood of a profitable return from the industry.

We have been considering in the last three articles the demand for, and supply of, fruits in this country, and the costs involved, which considerations have, in the main, been based on statements made by Mr. Seabrook in his paper to the Farmers' Club (see pp. 125 and 146). This paper, while giving great food for thought, tends to produce an unduly optimistic view towards Apple-growing. It is undoubtedly true that, in spite of the irregularity of supply of home-grown Apples, there are growers who can, and do, make Apple-growing pay. Equally, there are all too many growers who are failing to show a profit. In the writer's opinion, there are too many people who are inclined to look on Apple-growing as a side-line and an adjunct to ordinary farming, instead of realising that of all branches of fruit-growing it is, perhaps, the one which most bears out the remark of the Commissioner of Horticulture that "fruit-growing is much more allied to ordinary industry than are the ordinary farming practices."

If the intending Apple grower learns his job thoroughly as a fruit farmer, and is prepared to lock up his capital and get no return for at least seven years, and, in addition, has chosen the right variety for his locality, not always an easy matter, then he may make his venture a real success.

There is, nevertheless, a branch of the industry which shows brighter prospects. Soft fruits are in a thoroughly good competitive position on our home markets. They are in greater demand than ever, and the demand seems yet to be increasing, particularly for Black Currants. Less capital is required for planting and growing to productive age and this capital remains unprofitable for only two-and-a-half years, some only for eighteen months. The culture of soft fruits, although individual and needing care, may be successfully practised on arable farms. Weighing, packing and preparing for market are done in the open field, and no money is required for sinking in stores or graders.

The cost of establishing a plantation of Black Currants or Strawberries is in the neighbourhood of £40 per acre. This figure includes all costs up to the time of the first crop, eighteen months or so after planting. This fruit crop should bring in at least £30 (three-quarters-of-a-ton at £40). The next year's costs will amount to £40 or less, and the crop should be a full one. Between £40 and £50 have to be set against this crop, which should be worth £80 to £100. In subsequent years the figures remain approximately the same, and a Black Currant plantation should give at least six full crops and a Strawberry bed three. In each instance the figures for returns are understated, and therefore a larger profit is possible.

Fruit-growing then is, as a whole, a job for the specialist. Certain of its branches need less specialised training than others. A profitable return can be made, but it seems probable that the ordinary farmer would be well advised to consider soft fruits rather than Apple-growing. *A Norfolk Grower.*

VEGETABLE GARDEN.

BRUSSELS SPROUTS.

I HAVE been much interested in the correspondence *re* Brussels Sprouts. Mr. Bradley's results (see p. 87) from growing the crop in firm land should be remembered by all growers, and his practice of spreading a coating of manure over the entire surface is one followed by many successful Brassica growers; it is, I am told by no less an authority than Mr. Robert Scarlett, followed in Belgium and Holland with marked success, and he has confirmed it in Midlothian.

Mr. Bradley's last remark is the one I specially noted: "If there is a fault with those I have grown it is that they are too large." He grew Messrs. Dickson and Robinson's "Exhibition," an excellent, well-known, standard variety. My thoughts went back over a great many years when Messrs. Dobbie and Co. were exhibitors of Brussels Sprouts at a vegetable show at Chiswick, on the occasion of a Vegetable Conference. Their Sprouts were too large in the opinion of Mons. Vilmorin, who considered they were "much too large, the size of boys' marbles is best."

Mr. James Page, in your issue of March 2, surely takes us to quite the other extreme. His Sprouts, according to your measurements, were three to four inches in diameter. I could not conceive that such large ones are popular until I read Mr. Page's letter (p. 116): "They command the best market; they certainly look better in shops; and there is less waste; they cook a good colour and are of excellent flavour"—these are his words. So long as they command the best market, I suppose they will be grown by the hundreds of acres he speaks of. But; personally, I prefer a Sprout one-and-a-quarter-inch to one-and-a-half-inch in diameter for my own use, and so do very many of my friends. In the last trial of Brussels Sprouts by the Royal Horticultural Society, at Wisley (1923), the lots sent in were divided into two sections:—(a) Dwarf varieties, up to two feet; and (b) Tall varieties (over twenty-four inches); and each section was sub-divided into five sub-sections:—1, Sprouts, small; 2, Sprouts, small to medium; 3, Sprouts of medium size; 4, Sprouts, medium to large; and 5, Sprouts, large. Unfortunately, no measurement of the size of "button" is given. There is this year another trial at Wisley, and I am sure Mr. Chittenden can be induced to record this feature. Perhaps Wisley has records, and it would be interesting if they could be given.

At a lunch at Wisley last month I sat next to Mr. E. A. Bowles, and we had Brussels Sprouts—nice small ones we both appreciated. He told me of Canon Ellacombe's recipe for cooking Sprouts, a recipe Mr. Bowles has followed for twenty-five years:—"Have small Sprouts ready prepared for cooking, have the pot half to two-thirds full of boiling water, drop in the Sprouts, and when the water boils again allow the Sprouts to remain in for only four minutes, remove and serve at once, and a dish fit to set before a king is the result." I have told my wife that I want my Sprouts cooked in this fashion in future; she doubts whether four minutes is long enough, but we shall see next season. *William Cuthbertson.*

ASPARAGUS.

THE culture of this desirable vegetable has reached a high standard in the Vale of Evesham, being mostly grown by a host of small growers, who find it best, owing to the heavy nature of the land, to grow the plants in single rows, generally one yard apart, on well-ridged and cultivated soil. They generally sow their own seeds, saved from selected plants, and always have a patch ready for planting out, one foot apart, to replace exhausted stools. Either one- or two-year-old plants are used, these being planted on ridges. The remarkable part of the cultivation, as practised by these growers, is the earthing up. In the late autumn, with the aid of a two- or three-tined fork, the soil in the alleys is dug and turned clean over on to the rows, generally in great lumps, just as it is dug out—this is, needless to say, heavy work. Frost is always welcomed as a pulveriser and many anxious faces are seen if it does not come. In early spring the ridges are forked over, the soil being made fine; heavy dressings of soot are applied and are highly beneficial to the "grass."

When cutting commences, every stem is cut, usually at about nine inches in length, with an Asparagus knife; the treatment detailed above results in the "sticks" being blanched for more than half their length.

Grading is always practised, and the small stalks are known as "sprue." The sticks are bunched with the aid of a useful bunching stand, and are tied up with Willow bands, the Willows growing by brooklets which run by the gardens.

An Asparagus show is held annually at Badsey, the numerous cups being won by grand produce.

The high standard of produce attained by these market growers would astound many private gardeners, and at the auction following the show high prices are always realised for the prize bundles.

During the earlier years of growth, the sides of the Asparagus ridges are cropped with French Beans and small salad crops. Cutting finishes after Ascot week, and at this period prices are generally high. *C. H. Emmett, Taplow.*

SOCIETIES.

GUILDFORD GARDENERS'.

The series of winter lectures was concluded on Tuesday, March 5, when Mr. W. Auton spoke on "The Chemistry of the Garden."

In introducing his subject, Mr. Auton said that chemistry was the science of matter, and matter is the basis of all industries, and of life itself. Chemistry might therefore be regarded as occupying a foremost place among the sciences. Horticulture quite as much as, perhaps more than, any other industry, rests on a chemical basis, for the life cycle of the plant from seed to seed is one long series of chemical reactions.

The lecture which followed covered a wide field and was highly technical. It dealt with the essential elements necessary to plant life, and a part of the general argument referred to the pressing problem of finding a substitute for farmyard manures, to replace the soil elements which grown crops had withdrawn from it. Mr. Auton said that a better use should be found for vegetable matter than the bonfire—by means of which much potential fertilising matter is destroyed. If a bonfire must be made to burn woody matter or diseased plants, dry bins should be provided to conserve the ash until it could be applied to growing crops.

After an interesting discussion which followed the lecture, Mr. Mackay, of The Hill, Witley, expressed his pleasure, as an Old Kewite, at meeting Mr. Auton, another Old Kewite, and proposed a hearty vote of thanks for the interesting address.

The President, Mr. W. T. Patrick, referred to the long illness which followed the accident to Mr. Auton last June, and congratulated him upon his recovery and also upon his appointment as gardener at Moreton Hall in Warwickshire, and while it was regretted he would be leaving the Guildford district, he would carry with him all good wishes for his future happiness and success. Mention was made of a further loss caused by the removal of Mr. G. T. Watson, who has taken up the appointment of gardener to Viscount Boyne, Burwater Hall, Bridgnorth.

It speaks well for the good fellowship in the Association that both Mr. Auton and Mr. Watson will not sever their connection, but will remain in membership.

GLASGOW AND WEST OF SCOTLAND.

At the recent meeting of the Glasgow and West of Scotland Horticultural Society, Mr. Isaac Fleming, Superintendent of Parks, Paisley, who presided, referred to the loss the Society had sustained by the death of Mr. George Hunter, a member of the directorate.

The lecturer for the evening was Mr. Andrew Harley, Devonhall, Muckhart, Perthshire, who with the aid of an elaborate series of lantern slides described the flowering shrubs growing in his garden. In discussing their suitability for small gardens, he attributed their popularity to their usefulness and ease in cultivation. Once shrubs had been properly planted, the cost of upkeep was small, and contributed to the solution of the labour difficulty. There was such a large number to choose from that he did not understand why anyone should fill up their shrubbery border with such things as Laurels, ponticum Rhododendrons, Aucubas, Hollies, etc., mostly clipped into tight balls, thus losing their natural grace, when shrubs could be planted which will produce flowers from early spring until the end of October. Emphasising the importance of pruning, he explained that shrubs which flowered on the wood made in the previous season should be pruned immediately they had flowered, by cutting out the old wood, while those that flower in the autumn on wood made the same season should be pruned during winter or in early spring when growth is starting. All flowering shrubs, like herbaceous plants, respond to good treatment, and to get the best results it pays the grower to treat them in the same manner as Roses by giving the soil a mulch of manure in spring.

The following shrubs were described as easily grown, suitable for planting in small gardens, and producing blooms from early spring until autumn: — Jasminum nudiflorum, Daphne Mezereum, Forsythia suspensa, Cydonias, Berberis Darwinii, B. stenophylla, Viburnum Carlesii, V. plicatum, Lilacs, Rubus deliciosus (the Rocky Mountain Bramble), Philadelphus Lemoine hybrids, Deutzias, Cistus ladaniferus, C. laurifolius, Buddleias, Hypericum patulum Henryi and Hydrangea paniculata grandiflora.

CARDIFF GARDENERS'.

The fortnightly meeting of the above Association was held at the Queen's Hotel, Cardiff, on March 12, Mr. W. Bennett occupying the chair. There was a large gathering, which included many wives and friends of the members, who were all interested in the lecture and demonstration given by Mr. H. R. Farmer, of Cardiff Castle Gardens, on "Jam-making and Vegetable Bottling."

Mr. Farmer described in detail the various methods adopted in the making of jam and the bottling of fruits and vegetables, and he displayed the various utensils required, together with many bottles of jam and vegetables. He maintained that there are only three kinds of vegetables that are worth bottling, from a gardener's point of view, namely, Peas, Beans in variety, and Tomatos, and he considered water was preferable to brine for this purpose. Varieties of Peas which he had found most suitable and which keep their colour well, are Selected Duke of Albany, Peerless, Little Marvel, Duchess of York, King Edward and Ideal. All Peas for bottling, he stated, should be gathered when young.

An interesting discussion followed, and many questions were asked, all being answered concisely by Mr. Farmer.

The first prize for the best bowl of hardy spring flowers was awarded, to Mr. H. Jenkins, while for three plants of Polyanthuses, Mr. Cosham was first, and Mr. Franklin second. In the class for ten "seed" Potatos, sprouted, the first prize went to Mr. H. Jenkins; second, Mr. J. Jones, and third, Mr. D. Burns. Six points were awarded to Allan Gibbs, Esq. (gr. Mr. Hardwick), for Violets, Mr. Jenkins and Mr. Jones, for Perpetual-flowering Carnations, and Mr. Jones for a magnificent Hippeastrum, respectively.

For the most points secured during the half-session, Mr. H. Jenkins was first, and Mr. Baker and Mr. Jones shared second place. Mr. Price was awarded the prize offered by the Chairman for obtaining the most new members during the session.

PROFESSIONAL GARDENERS'.

The monthly meeting of the above Association was held at the Guildford Hotel, Leeds, on March 9.

Mr. Besant, the Parks Superintendent of Harrogate, gave a most interesting paper on "A Retrospective View of Horticulture." In tracing an outline of the training of gardeners before the war, the lecturer touched on the old system of a youth spending three years as an apprentice in a first-class garden, then working up by stages of one-and-a-half to two years at other places, doing both inside and outside work, until he was able to take a general foreman's place. About sixteen years elapsed before he was thought capable of taking a head gardener's place. He also stated that the best recruits for the parks were those from private gardens.

There was an animated discussion after the lecture as to the best training for gardeners for public and private service, opinion being about equally divided as to whether youths take as much interest in the profession as they did before the war. Mr. Besant maintained that the present day youth, if given a chance and a little encouragement, is quite as good as the pre-war youth. Replying to a question, "Do present head gardeners take as much interest in their young men as before the war?" Mr. Besant stated he thought they did; but the members were divided on the point. All agreed, however, that it is the duty of head gardeners to help the young men to the best of their ability. The lecturer was of the opinion that the P.G.A. and the Parks Superintendents' Association should work together to raise the status and pay of the horticultural worker generally.

The next meeting of the Association will be held at the Guildford Hotel, Leeds, on April 6, at 7 p.m., when a lecture on "Growing Exhibition Vegetables" will be given.

BIRMINGHAM AND MIDLAND COUNTIES GARDENERS'.

What may be termed the most successful gathering in the annals of the above Association took place at the White Horse Hotel, Birmingham, at the end of last month. One-hundred-and-forty-six members, together with their wives and friends, participated. The horticultural and allied trades were well represented, and in response to the appeal of the Chairman on behalf of the social and prize fund, £11 11s. 0d. was collected.

In submitting the loyal toast of the evening, the Chairman stated that he knew, if it were possible, the health of His Majesty the King would be drunk with more fervour than ever before by them, on this occasion, seeing that such a gracious and happy message had been received from Her Majesty the Queen in reply to their loyal and humble message of sympathy through the Chairman. A letter was read from the Lord Mayor of Birmingham, Alderman W. Byng Kenrick, J.P. expressing his desire to become a patron of the Association, as he appreciated the valuable work it was doing.

The "Success of the Association" was proposed by Mr. C. Ray, and the Chairman, in response, dealt with the aims and objects, together with the future policy of the Association. Fifty per cent. increase in membership was recorded during 1928, and it is anticipated that instead of fortnightly meetings being arranged for the autumn and spring of 1929-30, meetings will have to be arranged weekly, alternate Mondays being devoted to the professional gardeners, and the others to amateur members. Lectures would be arranged to meet the requirements of each.

The Chairman expressed the thanks of his Committee to the ever-ready assistance which they had received from the press, especially *The Gardeners' Chronicle* and the Birmingham City local press. Prizes were distributed to several members for essays submitted during the spring of 1928.

ANSWERS TO CORRESPONDENTS.

Names of Plants.—*G.* 1, Erica arborea; 2, E. carnea; 3, Vaccinum Myrtillus; 4, not recognised. *G. P.* 1 and 4, Colletia spinosa, Lam. (syn. C. armata, C. horrida, C. polyacantha, C. spinossima); 2, Colletia teniculata; 3, Olearia erubescens, from Australia; 5, appears to be Lonicera nitida, but only four undersized leaves were in the parcel, and a slender twig showing that the leaves were opposite before they fell off.

Pelargonium Unhealthy.—*W. W. F.* Parasitic fungi were not present on the Pelargonium plant, but saprophytic fungi and eelworms were in evidence. Fresh material may show that the damage is due to the stem eelworm, or may have been induced by low temperature and an excess of atmospheric moisture.

Tomato Plants Diseased. — *A. C.* The Tomato plants are attacked by a Phytophthora foot rot. The wilted plants should be removed and burnt, and the remainder watered with Cheshunt compound. Careful attention should be paid to watering, and the temperature kept so low as possible without impairing the health of the plants. Shade the plants during bright, sunny weather.

Communications Received. — W. M. T.—C. W. N.—J. C.—A. E.—A. G.—T. P.—J. G. W.—W. J. B.—C. H.—H. F.—A. T. J.—S. G. J.—A. G.

MARKETS.

COVENT GARDEN, Tuesday, March 19, 1929.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in the day.—Eds.

Plants in Pots, etc. : Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Adiantum cuneatum, per doz. ...	10 0	12 0
—elegans ...	10 0	12 0
Aralia Sieboldii	8 0	9 0
Araucarias, per doz.	30 0	40 0
Asparagus plumosus ...	12 0	18 0
—Sprengeri ...	12 0	18 0
Aspidistras, green ...	16 0	60 0
Aspleniums, doz.	12 0	18 0
—32's	24 0	30 0
—nidus ...	12 0	15 0
Azaleas, 32's, each	5 0	7 0
—per doz. ...	48 0	60 0
—60's, per doz.	15 0	18 0
Cacti, per tray, 12's, 15's ...	5 0	7 0
Cinerarias, per doz.	21 0	24 0
Crotons, per doz.	30 0	45 0
Cyclamens, per doz.	24 0	36 0

	s. d.	s. d.
Cyrtomiums ...	10 0	12 0
Daffodils, per doz.	15 0	18 0
Hyacinths (3 bulbs), per doz.	18 0	24 0
— 60's (1 bulb), per doz. ...	8 0	9 0
Marguerites, white, per doz.... ...	18 0	21 0
Nephrolepis in variety ...	12 0	18 0
—32's	24 0	36 0
Palms, Kentia	30 0	48 0
—60's	15 0	18 0
Primula malacoides, 60's, per doz. ...	7 0	8 0
Pteris in variety	10 0	15 0
—large, 60's ...	5 0	6 0
—small ...	4 0	5 0
—72's, per tray of 15 ...	2 6	3 0
Genistas, per doz.	21 0	30 0

Cut Flowers, etc. : Average Wholsale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	24 0	30 0
—cuneatum, per doz. bun. ...	15 0	16 0
Anemone fulgens, per doz. ...	5 0	6 0
Anemone, St. Brigid, per doz.	4 0	5 0
Arums (Richardias), per doz. blooms ...	8 0	12 0
Asparagus plumosus, per bun., long trails ...	2 6	3 0
—med. sprays	2 0	2 6
—short „ ...	1 0	1 6
—Sprengeri, bun. long sprays...	2 0	2 6
—med. „ ...	1 6	2 6
—short „ ...	1 0	1 3
Azaleas, white, per doz. bun.	9 0	10 0
Camellias, white, per doz. blooms	3 0	3 6
Carnations, per doz. blooms	2 6	5 0
Croton leaves, per doz. ...	1 9	2 6
Daffodils, single, per doz. bun.	5 0	6 0
—Emperor, per doz. bun. ...	12 0	15 0
—King Alfred, per doz. bun.	18 0	21 0
—double, per doz. bun. ...	5 0	6 0
— Victoria, per doz. bun. ...	12 0	15 0
—Princeps, per doz. bun. ...	6 0	7 0
—Sir Watkin, per doz. bun.	9 0	12 0
Ferns, French, per doz. bun.	10 0	12 0
Forget-me-nots, per doz. bun.	12 0	15 0
Freesias, white, per doz. bun.	5 0	6 0
Heather, white, per doz. bun.	9 0	12 0
Iris, Spanish, blue, per doz. blooms	5 0	6 0
— — white, per doz. blooms...	4 0	5 0
— — yellow, per doz. blooms...	5 0	6 0
Lilac, white, per doz. sprays...	6 0	10 0
—mauve, per doz. sprays ...	6 0	9 0
Lilium longiflorum, long, per bun.	7 0	8 0
— — short, per doz. blooms	7 0	8 0
—speciosum rubrum, long, per doz. ...	5 6	6 0
— — — short, per doz. ...	4 6	5 0

	s. d.	s. d.
Lily-of-the-Valley, per doz. bun.	24 0	30 0
Myrtle, green, per doz. bun.	1 6	2 6
Narcissus, Soliel d'Or, per doz. bun.... ...	5 0	6 0
—Elvira, per doz. bun.... ...	15 0	18 0
—Grand Primo	8 0	12 0
—ornatus, per doz. bun. ...	8 0	12 0
Orchids, per doz.		
—Cattleyas ...	18 0	30 0
—Cypripediums	9 0	18 0
Primroses, per doz. bun. ...	3 0	4 0
Prunus triloba, per bunch ...	4 0	5 0
Roses, per doz. blooms—		
—Columbia ...	12 0	18 0
—Richmond ...	6 0	12 0
—Yellow ...	8 0	12 0
—Molly Crawford	8 0	9 0
—Butterfly ...	8 0	12 0
Smilax, per doz. trails ...	6 0	7 6
Snowdrops, single, per doz. bun.... ...	2 6	4 6
Stock, double white, per pad	9 0	12 0
—double pink, per pad ...	10 0	12 0
Tulips, per doz. bunches—		
—white ...	24 0	36 0
—yellow ...	24 0	30 0
—red	24 0	30 0
—pink... ...	24 0	36 0
—terra-cotta ...	24 0	30 0
—mauve ...	24 0	36 0
—double varieties	30 0	36 0
—Darwin's, pink, per doz. bun.	24 0	36 0
— — red, per doz. bun. ...	30 0	36 0
Violets, Prince of Wales, per doz. bun.... ...	3 0	5 0
French Flowers—		
—Anemones, De Caen, per doz. bun. ...	10 0	12 0
—Ranunculus, double scarlet, per doz. bun.	12 0	15 0
—Violets, Parma, per large bun.	2 6	3 6

Remarks.—As regards white blooms, the conditions are lightly improved; more cut white Azalea, Narcissus Grand Primo and N. ornatus have been available in the English department, and more double white Stocks in the French department, but there is no prospect of any fall in prices owing to the increased demand for the great festival in Wales this coming week-end. Best quality Daffodil blooms from home-growers are still realising good prices, but cheaper grades are considerably on the increase from Cornwall and the Channel Islands, other arrivals including white Narcissi, Wallflowers, Forget-me-nots, Tulips, Violets, Irises and Anemones. Tulips have been generally shorter, especially Darwins, and prices have been on the up grade during the past week. Roses are now drawing more attention, being much finer in quality and a better selection on offer, but supplies are still below requirements. In the pot plant department business begins to show some improvement, after a very dull time. More flowering plants are now on sale, which include white Marguerites, white Spiraeas, Erica persoluta, Acacia Drummondii and Boronia megastigma, also a few blue and white Hydrangeas. There is also a good supply of Daffodils and Hyacinths, and Ferns are gradually improving in quality.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Asparagus, English	10 0	12 0
—French—		
—Paris Green...	9 0	10 0
—Lauris ...	10 0	12 0
—Cavaillon ...	8 0	9 0
—Sprue ...	—	1 9
Beans—		
—Worthing, finest, per lb.	1 9	2 6
—Guernsey ...	1 9	3 0
—Madeira ...	6 0	8 0
Beet. per bag ...	4 0	6 0
Brussels Sprouts, ½-bag ...	4 0	6 0
Cabbage, per bag	6 0	8 0
Carrots, ½-bag	6 0	8 0
Cauliflowers, Cornish, crates, 18's, 24's ...	10 0	14 0
—French, St. Malo ...	4 0	6 0
Chicory, Belgian	0 8	0 10
Cucumbers, doz.	4 0	15 0
Endive, French, per crate, 18's and 24's ...	9 0	10 0

	s. d.	s. d.
Lettuce, Cabbage—		
—French, indoor, 48's, 60's	8 0	10 0
—outdoor, 24's	5 0	10 0
Mint, per doz. bun.... ...	4 0	8 0
Mushrooms—		
—cups, per lb.	2 0	3 0
Onions, Spanish	20 0	22 6
Parsnips, cwt.	7 0	8 0
Peas, French ...	7 0	10 0
—Algerian ...	10 0	12 0
Potatos—		
—English, cwt.	6 6	7 6
—new hot-house, per lb. ...	1 0	1 3
—Algerian, new, per lb. ...	0 3	0 3½
Rhubarb, forced, per doz. ...	2 0	2 6
Savoys, per doz.	2 6	4 0
Seakale, boxes, 8 lb. ...	7 0	8 0
Tomatos, Canary Island, per bundle ...	16 0	25 0

Fruit : Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Extra Special	16 0	18 0
—Special ...	13 0	14 0
—Best	10 0	12 0
—American—		
—Newtown ...	13 0	14 0
—Albemarle Pippin, per barrel	36 0	38 0
—Nova Scotian—		
—Ben Davis ...	20 0	24 0
—Starks ...	20 0	25 0
—Golden Russet	32 0	36 0
—Ribston ...	35 0	40 0
Bananas, per bun.... ...	14 0	25 0
Dates, dry, in cartons ...	6 0	6 6
Grapes—		
—English—		
—Gros Colmar	4 0	5 0
—Belgian Colmar	2 6	3 0
—Cape—		
—Colmar ...	12 0	20 0
—Hermitage ...	7 0	8 0
—Waltham Cross	10 0	15 0
—Rosaki ...	12 0	15 0
—Red and white Hanneport ...	12 0	15 0
—Molinera ...	10 0	12 0
—Barbarossa ...	10 0	12 6

	s. d.	s. d.
Grape Fruits—		
—Jamaica ...	18 0	21 0
—Florida ...	25 0	27 0
—Honduras ...	—	20 0
Lemons, per case—		
—Messina ...	15 0	25 0
Nectarines, Cape, per tray ...	5 0	10 0
Oranges—		
—Seville, per case	18 0	26 0
—Almeria, case	18 0	30 0
—Jaffa ...	24 0	26 0
—Denia ...	18 0	42 6
—Californian Navels ...	28 0	30 0
Peaches, South African, tray	5 0	12 0
Pears, Cape—		
—L. Bonne ...	6 0	8 0
—Bon Chretien	4 0	5 0
—Beurre Hardy	5 0	8 0
—Beurre Bosc	6 0	7 0
—Californian—		
—Nelis, ½-box	—	12 0
—Mandarins ...	7 0	7 6
—Winter Nelis, ½-case ...	11 0	12 0
Pineapples, case	17 0	36 0
Plums, Cape—		
—Prunes, per box	—	7 0
—Kelsey ...	6 0	10 0

Remarks.—Trade conditions in the market have been somewhat variable this week, but at the moment the tone is moderately good. The Cape fruit shipments are heavy, consisting mainly of Grapes, Nectarines, Pears, Plums and Peaches, and the demand is quite good. The Apple market is fairly steady, but prices are on the easy side for both imported produce and the English Bramley's Seedlings that are now being marketed. Hothouse Grapes are selling at prices which are no doubt satisfactory considering the competition of other choice fruits from South Africa. Forced Rhubarb is maintaining good prices and continues to sell well. A few English Tomatos are now available, but prices are rather high. Tomatos from the Canary Islands are not plentiful, and they maintain comparatively firm values. Cucumbers sell with more freedom after a period of slack trade, and quantities show an improvement almost each day. Forced Beans are selling better, although prices are not higher. The latest shipment of Beans from Madeira is in good condition and the Beans have realised higher prices. Forced Potatos from Guernsey have shown some increase in price since last week. New Potatos from Algeria have met a good market as new Potatos are comparatively scarce. Salads, mainly from France, are selling well at prices which must be considered almost prohibitive. Some very good Broccoli is now arriving from Cornwall and is selling remarkably well, especially so in comparison with figures which are ruling for St. Malo and Roscoff produce. There are rather better supplies of green vegetables which have brought about lower prices in that market. Root crops remain in steady demand with prices a shade easier. The trade in old Potatos is moderately brisk, especially for top-grade varieties.

GLASGOW.

Prices moved irregularly in the cut flower market last week. Tulips advanced in price, William Copland, Bartigon, William Pitt, Le Notre, Princess Elizabeth and Couronne d'Or ranging from 1s. 3d. to 1s. 9d. for 6's; and Peach Blossom, Lucretia, Murillo, Tea Rose, Flamingo, La Reine and Luisante, 10d. to 1s. 6d. Daffodils, were also dearer; King Alfred was worth 2s. 6d. per dozen; Golden Spur, Emperor, Victoria and Sir Watkin, 1s. 2d. to 1s. 6d.; Princeps and Henry Irving, 8d. to 10d.; and ornatus, 10d. to 1s. 3d. On the other hand, price declines were registered in Carnations at 2s. to 4s. per dozen (all colours); red and pink Roses, 8s. to 12s.; Lilium longiflorum and Richardias, 6s. to 7s.; Anemones, 10d. to 1s. 3d. per bunch; Ranunculus, 1s. 6d. to 2s.; Myosotis, 9d. to 1s.; and Snowdrops, 2s. to 3s. per dozen bunches. Marigolds sold at 7d. to 9d. per bunch; Wallflowers, 4d.; Lily-of-the-Valley, 2s. 3d. to 2s. 6d.; Cypripediums, 1s. each; and Mimosa 8s. to 10s. per pad.

The feature of the fruit market was an appreciable advance of 2s. 6d. to 4s. per case in the price of Valencia Oranges; ordinary 420's were quoted at 30s. to 38s.; large, 420's, 38s. to 48s.; 200's, 21s. 6d. to 32s.; 240's, 22s. 6d. to 32s.; 300's 22s. to 28s.; 360's, 21s. to 24s.; and 500's, 21s. to 24s. Jaffa Oranges, 144's, made 22s. to 23s.; 152's, 22s. to 23s.; and 120's, 21s. to 22s. Californian seedless Oranges, 126's, sold at 27s.; 150's, 28s. to 29s.; and 176's, 30s. to 31s. Apples were firm in price, Winesap, ex. fancy, realising 12s. to 13s.; Rome Beauty, 11s. to 13s. per case; and Albermarle, 21s. to 31s. 6d. per barrel. Grape Fruits, Florida and Arizona, 70's, sold at 21s. to 22s.; 80's, 23s. to 24s.; while English hothouse Strawberries made 40s. per box, and the first consignments of new English Tomatos, 7s. per lb. Home-grown Grapes were 4s. to 4s. 6d. per lb.; Pineapples 3s. 6d. to 4s. 6d. each; South African Peaches, 4s. to 5s. 6d. per tray; Nectarines, 3s. to 4s. 6d.; Plums, 5s to 6s.; and Grapes, 10s. to 13s. 6d.

In the vegetable market Lettuces were in active demand at 12s. per crate, while Cauliflowers realised 8s. to 10s. for 24's; Cucumbers (Dutch), 10d. to 1s.; English, 1s. 9d.; and Rhubarb realised 6s. per cwt. Guernsey Beans declined from 8s. to 3s. per lb.

SCHEDULES RECEIVED.

Royal Agricultural Society of England.—Flower Show at Harrogate, on Tuesday, Wednesday, Thursday and Friday, July 9, 10, 11, and 12. Secretary, Mr. T. B. Turner, 16, Bedford Square, London, W.C.1.

Saffron Walden Horticultural Society.—Flower and Horse Show, in the North Deer Park, Saffron Walden, on Thursday, July 25. Secretary, Mr. George Collin, 3, Landscape View, Saffron Walden.

Leicester Abbey Park Flower Show.—Fortieth Annual Show, in Abbey Park, on Tuesday and Wednesday, August 6 and 7. Secretary, Mr. R. Lisle, Superintendent, Abbey Park, Leicester.

Brighton, Hove and Sussex Horticultural Society.—Spring Show in the Dome and Corn Exchange, Brighton, on April 10 and 11. Rose, Sweet Pea and Carnation Show, Wednesday and Thursday, July 3 and 4. Chrysanthemum Show, Tuesday, Wednesday and Thursday, November 12, 13 and 14. Secretary, Mr. H. J. Bingham, 128, Queen's Park Road, Brighton.

West of England Chrysanthemum Society.—Exhibition, in the Guildhall, Plymouth, on Tuesday, Wednesday and Thursday, November 5, 6 and 7. Secretary, Mr. S. Collecott, Florist, 52, Cobourg Street, Plymouth.

Yorkshire Flower Show and Gala.—At York, Tuesday, Wednesday and Thursday, June 18, 19 and 20. Secretary, Mr. P. Mennim, The Assembly Rooms, York.

CATALOGUES RECEIVED.

Acme Chemical Co., Ltd., Tonbridge, Kent.—Weedkillers, Fumigants, Fertilisers and Sundries.

Boulton and Paul, Norwich.—Revolving Shelters and Garden Rooms.

Slug-Mort Company, Penzance.—Slug-Mort (slug and snail exterminator).

Andrew Ireland and Hitchcock, Marks Tey, Essex.—Special offer of Sweet Pea Plants, Gladioli, Bedding Plants and Seed Potatos.

Clarence Elliott, Ltd., Stevenage, Herts.—Seeds of Annual and Perennial Flowers.

Little Munden Nursery, Ware, Herts.—Hardy Herbaceous Plants.

Treseder, Ltd., Cardiff.—Dahlias, Chrysanthemums, Sweet Peas, Carnations, Bedding Plants, etc.

A. and W. Perry, Enfield, Middlesex.—New and Rare Alpines and Perennials, Alpine and Perennial Seeds, Gladioli, Water Plants, etc.

Cooper, Taber and Co., Ltd., London, S.E.1.—Wholesale Catalogue of Agricultural Seeds.

THE
Gardeners' Chronicle

No. 2205.—SATURDAY, MARCH 30, 1929.

CONTENTS.

Agricultural service, a colonial 237
Alpine garden—
  Saxifrages, early-flowering... ... 242
  Tiarella cordifolia ... 242
Azaleas, Kurume ... 244
Bog and water garden—
  Cardamines ... 246
  Primula rosea ... 246
  Rodgersia tabularis 246
Carrot, Onion and Cabbage root flies, control of 250
Daffodil Show, London 236
Fruit register—
  Sturmer Pippin ... 251
Hardy flower border—
  Astilbes, modern hybrids 247
  Kniphofias 247
  Mimulus Bartonianus 247
Indoor plants—
  Carnations, Perpetual-flowering... 241
  Statice profusa ... 241
Obituary—
  Bannatyne, junr., John 254
  Slicock, H. 254
  Tomalin, Alfred ... 254
  Wittmack, Ludwig 254
Peas, trials of early culinary 236
Planting, late, in the present season ... 240
Plants new or noteworthy—
  Fritillaria karadaghensis 242
Potato futures ... 251
Potato, the future of the 235
Primula, the genus ... 248
Rose garden—
  Roses, late-flowering 240
Shewell-Cooper. Mr. W. E. 236
Societies—
  Derbyshire Horticultural 254
  Manchester and Salford Gardeners' ... 253
  Reading Gardeners' 254
  Royal Horticultural 252
Spartina Townsendii on Canvey Island ... 236
Trees and shrubs—
  Cistus corbariensis... 240
  Helianthemum umbellatum 240
  Viburnum tomentosum var. plicatum 240
Ward's, Mr. F. Kingdon, tenth expedition in Asia 242
Week's work, the ... 238
Welsh garden, notes from a 245
Wisley, notes from ... 246
Woodland garden—
  Borago laxiflora ... 241

ILLUSTRATIONS.

Azaleas, Kurume, in Kurume City, Japan, 245; in the nursery of Messrs. Akashi-Korakuen at Ogri, Japan 245
Azaleas, Kurume, types of 244, 247, 249
Shewell-Cooper, Mr. W. E. 236
Statice profusa 239, 241
Ward's, Mr. F. Kingdon, tenth expedition in Asia 242, 248
Viburnum tomentosum var. plicatum 237

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 45·8°.

ACTUAL TEMPERATURE—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Tuesday, March 26, 10 a.m. Bar. 30·5. Temp. 49°. Weather, Overcast.

The Future of the Potato

UNDER the somewhat cryptic title "Potato Futures" (see p. 251), Mr. William Cuthbertson—after reviewing briefly the recent past of the Potato—looks with an enquiring eye to the future. What, he asks, is to be the policy of those engaged in raising new varieties? Are they to go on working along present lines, or are they to venture along other and older lines? Until the early years of the present century, the Potato breeders' only care had been to produce races of Potato superior in yield and quality to the best of their predecessors. They were successful. Each decade saw the introduction of new varieties of outstanding and enduring merit. Then, however, came the Wart Disease menace. Mycologists predicted that unless precautions were taken this disease would render Potato-growing impossible. Whether they were right or wrong in this gloomy prognostication no one knows. It is probable that they were wrong. But it is certain that in view of the seriousness of the menace the Ministry of Agriculture was right in taking the most drastic precautions to prevent the spread of the disease. Nor does our indebtedness to the Ministry end there, for it was responsible for the discovery that varieties exist which are immune to Wart Disease, and for the establishment of the Ormskirk Station at which all varieties of the Potato could be, and have been, tested for susceptibility to, or immunity from, Wart Disease.

It will be seen, therefore, that Wart Disease has become a sort of King Charles' head in the Potato picture. The fear of the spread of the disease has influenced the development of the Potato. Mr. Cuthbertson asks, and in our opinion asks very cogently, whether the same fear shall be allowed to govern the future development of the Potato. That it has governed the development of the Potato in the immediate past is clear. Instead of fixing their attention exclusively on yield and quality, the plant breeders of the last decade or two have had, perforce, to pursue not a single but a dual objective. They have had to keep one eye on the yield and quality of their seedlings, and the other on the response of these seedlings to Wart Disease. It is, therefore, perhaps not surprising that the Potato breeder of the present day, although he has notable successes to his credit, has not succeeded in producing new immune varieties good enough to take the place of Duke of York, British Queen, King Edward, Up-to-Date or Arran Chief. Great Potatos, like great men, come not singly and often, but rarely and in little groups. If the test of greatness is complicated the groups will be rarer and smaller. Why, therefore, complicate the test? Why, in other words, should the breeder bother himself about Wart Disease? Let him aim at producing the best yielding and best quality Potato. There are nearly two-and-a-half million acres of land eagerly awaiting the advent of new varieties of excellence surpassing that of the best of existing varieties. In the infinite sea of novelty there are fresh and better fish to be caught than those netted hitherto. Why throw back those which do not satisfy an unnecessarily exacting test? Our Potato breeders are seizing the shadow and rejecting the substance. There are only one hundred thousand acres of land scheduled as infected under the Wart Disease Order, that is, one-twenty-fifth of the area not scheduled. Why devote effort so exclusively to the discovery of new varieties suitable for the hundred thousand acres, instead of finding new varieties which will increase yields and profits in that large area of Potato land in which Wart Disease appears to exercise no menace? After all, Wart Disease, even as a bogey, is out of date—like guys on November 5. The maladies to make modern Potato flesh creep are not Wart, but Virus diseases. We agree, therefore, with Mr. Cuthbertson, and hope that Potato breeders will, as it were, let ill alone, and devote their energies primarily to the task of raising varieties of high yield and quality. If they do that it is certain that the future of the Potato in this country will be as rosy as has been its past, and that notwithstanding the excursions and alarms which are bound to flutter our hearts as new diseases are discovered or old ones develop a new, albeit evanescent, viciousness.

Captain F. Kingdon Ward.—Captain Kingdon Ward has reached Madras on his way to Rangoon en route for the Shan Plateau, preparatory to commencing his expedition in a mountainous and hitherto unexplored region of Indo-China. The party will be made up of Colonel Theodore Roosevelt, Mr. Kermit Roosevelt, Mr. S. Cutting, Mr. Stevens and Captain Kingdon Ward.

The Prince of Wales in Covent Garden Market.—The Prince of Wales visited Covent Garden Market in the early morning of Friday, March 22, and spent a busy hour-and-a-half inspecting the various stalls and chatting with the numerous salesmen, asking many questions concerning the origin and destination of the flowers and fruits. He was particularly interested in the flowers from the Scilly Islands, where he has an experimental farm, and in the various fruits from the Colonies. His Royal Highness visited Messrs. George Monro's establishment, and also spent some minutes talking to Mrs. Garcia, the only retail florist with a stall in the market. The Prince arrived at the Market at 7 a.m., and left just before 8.30 a.m., so that he was able to see the market at its busiest time.

Memorials in London Parks.—At the meeting of the London County Council on Tuesday, March 19, the subject was discussed of a memorial to the late Lord Hambleden, which is to be placed in Lincoln's Inn Fields, a small open space in Holborn. Considerable criticism was forthcoming from certain members of the Council and it was stated that the Parks and Open Spaces Committee had at one time refused to sanction the erection of the memorial on the ground that the space, which is only seven acres in extent, and already fully occupied in various ways, is too small to accommodate it. It was argued that there were already too many memorials in the London Parks, and many of the smaller spaces were seriously encumbered with them. It was finally decided to allow the matter to proceed, on the grounds that it would be ungracious to refuse it at so late a stage, and in view of the generosity, especially to the London hospitals, of the late Lord Hambleden.

Carnations Registered with the American Carnation Society, 1928.—Three Carnation novelties were registered with the American Carnation Society during the year 1928, namely, Dandy, Pink Abundage and Spectrum Supreme. Dandy, registered by Messrs. Roman J. Irwin, Inc., New York City, is a sport from Morning Glow; it is rose-pink in colour, and similar in size and general description to Morning Glow. Pink Abundage is described as a seedling from Natalie, with bright rose-pink flowers three inches to three-and-a-half inches across; it is free and continuous flowering, the blooms being borne on long, stiff stems; registered by Messrs. Baur-Stienkemp and Co., Indianopolis. Spectrum Supreme is a dark scarlet sport from Spectrum and is in habit and size similar to it; it was introduced by Mr. George E. Buxton, Nashua, N.H.

More Land in the Lake District acquired by the National Trust.—Through the generosity of Mr. F. J. Hayes, of High Wray, near Hawkshead, a further addition has been made to the properties of the National Trust in the Lake District. This recent acquisition, the gift of Mr. Wray, is the promontory on Lake Windermere known as Bee Holme, situated on the Lancashire shore at the northern end of the lake, not far from Wray Castle. The promontory embraces about three acres of wooded land, and is an island for nine months of the year. Another recent gift of property in this district to the National Trust is that of Cockley Beck Farm, at the head of Duddon Valley, by Mr. and Mrs. E. D. Simon, who purchased it recently and presented it to the Trust with a view to preserving this exceptionally beautiful area, which lies at the foot of Hardknott Pass, in its present unspoiled condition. The property will remain as a farm, but will not be developed in any manner that will spoil its attractiveness.

The "Rose Annual," 1929.—Those who are fortunate in possessing the whole series of *Rose Annuals* published by the National Rose Society have now a goodly library of practical and scientific information concerning the Rose, in addition to Rose history, Rose poetry, Rose aesthetics, and illustrations of Roses and Rose gardens. The newest issue, for 1929, is as admirable as any of its forerunners, and is a further indication of the vast popularity of the Rose and the immense amount of interest taken in its cultivation. The enthusiasm of a keen Rosarian is unbounded; it is reflected in his conversation and in his desire to "tell the world" of his successes and his failures. This enthusiasm is very obvious in the *Rose Annual*, 1929, for the issue is largely devoted to the papers read at the International Rose Conference held at Westminster in July last. The report of the proceedings opens with fundamentals, *i.e.*, Mr. Osborn's observations on "Rose Species," followed by Major Hurst's very able discussion on the "Genetics of the Rose," wherein he points out that "chromosomes carry the Mendelian factors, or *genes* as we now call them, which differentiate the various characters of the Rose." Mr. H. R. Darlington, greatly daring, deals with "The Future of the Rose," and makes a strong appeal for fragrance, but expresses the belief that "the fragrance of the Rose to-day is greater and not less than the Rose of our fathers." In "The Future of the Rose as a Decorative Flower," Mr. G. M. Taylor gives remarkable figures, from Mr. G. Monro, to show the tremendous increase in the production of cut Roses for market during the past ten years. Then follow excellent articles on the "Diseases of the Rose," by Mr. John Ramsbottom; "Colour in the Rose Garden," by Mrs. H. R. Darlington; "Roses as Cut Blooms," by Mrs. F. A. Simonds; and a symposium of "Twenty-four Roses for General Garden Cultivation," arranged by Mr. Darlington as the result of voting by members. Mr. Herbert Cowley writes pleasantly of "The Rose Gardens of Bulgaria." A brief account (with illustrations) of the Society's trial grounds at Hayward's Heath—adjoining Messrs. Charlesworth and Co.'s Orchid nurseries—will prove, to many, to be one of the most interesting items in a most interesting publication. There are reports of the Rose shows of 1928, descriptions of new Roses, and many other interesting items in the three hundred pages, while the text is brightened by scores of half-tone blocks and sixteen full-page illustrations in colour, chiefly of new Roses.

Clivia Ursula.—We are informed that a clerical error occurred in the entry of this Clivia for the consideration of the Royal Horticultural Society's Floral Committee on March 12. The exhibitor was the Rt. Hon. Robert James, St. Nicholas, Richmond, Yorkshire, and not Mrs. R. James, as stated on p. 212.

American Expedition to the Orient.—We learn that a two-year expedition to the Orient, with the primary object of studying Soy Bean culture, has been undertaken by Mr. P. H. Dorsett and Mr. W. J. Morse, of the United States Department of Agriculture. The main object of the exploration will be to study methods of Soy Bean culture in Japan, Chosen, Manchuria and Java, and to seek varieties not at present cultivated in America; varieties of the Persimmon will also be collected, several Japanese and Chinese varieties of this fruit already being in cultivation in the southern States and California; it is also hoped that a better rootstock for the Persimmon than that at present employed in America, will be obtained. Besides the two crops mentioned above, the explorer's will hunt for drought and cold resistant shrubs and trees in Manchuria and northern Japan, and for Leguminous crops for green manure and forage purposes.

Legacies to Gardeners.—The late Mr. Edmund de Quincey Quincey, of Oakwood, Chislehurst, who died on January 26, left £200 to his gardener, Mr. George Lees.—The late Mr. William Martin Stoffell, of Fairfield, Newbridge Weston, Bath, who died on January 12, left £50 to his gardener, Mr. Herbert Thomas George, if still in his service and not under notice.

British Mycological Society's Spring Foray.—The 1929 Spring Foray will be held at Petersfield during the Whitsun week-end. Accommodation is very limited, and members wishing to attend are advised to book their rooms at once. Terms have been arranged as follows, exclusive of afternoon tea:—Lyndum House, High Street, 13s. 6d. per day; The Old College Residential Hotel, 10s. 6d. per day; and Terry's Private Hotel (Temperance), 9s. per day. Application should in each case be made to the Proprietress, stating whether single or double rooms are required. The number of single rooms is everywhere very limited, but most of the larger rooms have two beds. A room at the Old College has been secured for use as headquarters, but this hotel cannot take many members, hence early application is necessary for those who do not want the short walk from the other hotels. The following excursions have been arranged provisionally:—Saturday, May 18: Harting Combe and district around, starting 10 a.m.; Monday, May 20: Up Park and Hemner Hill, working back at base of Downs towards Petersfield; Sunday excursions will be planned according to weather, number present, etc. It would be of assistance if members intending to take part in the Foray would advise the Secretary, Miss E. M. Wakefield, Herbarium, Royal Botanic Gardens, Kew, so soon as possible, and state if they have any papers or exhibits for evening meetings.

Mr. W. E. Shewell-Cooper.—Although coming from a family whose sons have usually been soldiers, Mr. W. E. Shewell-Cooper has devoted his life to peaceful pursuits. Educated at Monkton Combe School, near Bath, and at the Diocesan College, South Africa, he turned his attention to fruit culture and became apprenticed to the business at Mr. C. Van der Bijh's fruit farm at Witte Booman, Constantia, South Africa, where Peaches, Nectarines, Grapes and Loquats are cultivated for export to the British markets. After serving in German South-West Africa during the war, he entered service with Mr. H. M. Cobb, whose extensive fruit farms and market gardens are at Mockbeggar, Higham, Kent. In 1921 he entered Wye College, taking the horticultural course, and the full commercial course, obtaining the National Diploma (I and II) and the prize offered for the most practical man of the year. In 1922, Mr. Shewell-Cooper was appointed Recorder at the East Malling Research Station and later, in the same year, he became Orchard Manager to Messrs. Whiteways at Whimple, Devonshire, where he installed a fruit grader and taught students. In 1923 he served under Mr. H. Dunkin, as Assistant Horticultural Instructor to the Warwickshire County Council, and two years later received the appointment of County Inspector of School Gardens and Assistant Lecturer in Horticulture in Cheshire, with headquarters at the Cheshire School of Agriculture. In 1926 he was appointed Horticultural Superintendent of this School, at Reaseheath—a position he still holds. At Reaseheath, he controls twenty-one acres of horticultural land, a range of eight glasshouses, and four acres of orchards. He has organised trials of early-flowering Chrysanthemums, soil sterilisation, tar distillate washes, and varieties of vegetables, besides arranging demonstrations and courses on fruit bottling, and a Cheshire County Commercial Fruit Show. Articles by Mr. Shewell-Cooper, and reports of his trials, have appeared in these pages during the last few years. Mr. Shewell-Cooper has written many leaflets on horticultural subjects, is a bee-keeping expert, a member of numerous county associations, and is the South Cheshire District Commissioner of the Boy Scouts organisation.

MR. W. E. SHEWELL-COOPER.

Spartium Townsendii on Canvey Island.—A thousand roots of Spartina Townsendii have been planted on the foreshore of Canvey Island, at the mouth of the Thames, in order to preserve the shore from erosion. This grass, which spreads very rapidly, has been utilised in considerable quantities of late years in land reclamation, and is found to make an excellent foundation upon which permanent pasture land can subsequently be established.

Heath Fires near London.—A heath fire held up the golf on Sunday, March 24, on the Downe Golf Links, near Bromley, Kent, and the golfers and villagers assisted the firemen in their efforts to put out the flames. There was also a serious outbreak of fire on Hayes Common the same afternoon, in the subduing of which the firemen were helped by motorists and members of pic-nic parties. A call was also received from Pett's Wood, Chislehurst, the trees and shrubs in which were ablaze over a large area. Fires were also reported at Grove Park, near Bromley, Barnes Common, and Charnwood Forest, near Coalville; at the last-named some twenty acres of Gorse and woodland were involved.

The Shortage of Rain.—The very light rainfall of the last three months is creating a little anxiety in agricultural and horticultural circles, as although, at present, a deficiency of water in the soil is not noticeable, it is felt that unless heavy rainfall is experienced within the next few weeks, the crops of the coming season may be seriously affected, owing to the early drying-up of the springs.

An Einstein Forest in Palestine.—To commemorate the fiftieth birthday of Professor A. Einstein, which occurred on March 14, the Zionists are to plant a forest near Jerusalem which will be named after him. In Berlin, Professor Einstein's services to science were recognised on the occasion of his birthday by the presentation of a life tenancy of a beautifully situated mansion, while the University of Paris conferred an honorary degree upon him

London Daffodil Show.—The Royal Horticultural Society's Narcissus and Tulip Committee decided, on Tuesday, to postpone the London Daffodil Show from April 9 and 10 until April 16 and 17. The show will be held in the old hall, Vincent Square.

Trials of Early Culinary Peas.—With a view to ascertaining earliness of cropping, weight of crop, and general suitability, trials of culinary Peas were conducted last year by the Agricultural Department of the Education Committee of the Leicestershire County Council. The varieties grown were Little Marvel, Marvellous, English Wonder, Hundredfold, Peter Pan, Lincoln, Progress, Pioneer, Sherwood, Laxtonian, Superb and Pilot. The ground in which the Peas were grown was on the light side; a Mustard crop had been ploughed in the autumn previous, and before harrowing, a dressing of half-a-hundredweight of sulphate of ammonia, four hundredweights of superphosphate, and one hundredweight of muriate of potash per acre, was applied. Three rows, each fifty feet long, of each variety, were sown on March 19, the rows being two feet six inches apart. The majority of the pods of each variety were allowed to develop fully before being picked, all the marketable pods of each variety being gathered at one picking, although it is doubtful whether this was wise from an economical point of view, as many pods were only commencing to fill when others were fully developed; in several cases the first picking could have been made several days earlier. It is stated in the report of these trials that with a variety like Pilot there would be little advantage in more than one picking, as the bulk of the crop matures at once, but with sorts such as Peter Pan, Pioneer, and Lincoln especially, a greater weight of crop would be obtained if the pickings were extended to two or three. Pilot was the first variety picked; it is regarded as a good cropper, but its yellowish-green pods are stated to be not very attractive. Little Marvel was second; its pods are small but well filled and produced in pairs, the one fault being they are blunt and difficult to open.

Next, in order of maturing, was Hundredfold, a good all-round early sort, and this was followed by Peter Pan and Pioneer, both good croppers, the latter possibly the better of the two; Progress, Superb, Laxtonian, English Wonder, Sherwood, Marvellous and Lincoln, the last-named being picked about three weeks after Pilot; it is regarded as too late in maturing for early work. Hundredfold, Progress and Lincoln gave the heaviest crops of pods, while Pioneer gave the heaviest weight of shelled Peas from 4 lbs. of pods, Marvellous and Superb being second and third, respectively.

Filming the London Royal Parks.—We learn that the Commissioner of Works has granted permission to a filming corporation to take Cinematograph pictures in colour, of the London Royal Parks. Hitherto permission has not been allowed, but now the ban has been lifted no doubt many cinematograph firms will take advantage of this opportunity of securing pictures which will show the world how beautiful are our London parks.

Welsh Playing Fields Scheme.—Work for many of the unemployed miners in the Rhondda Valley may materialise if the scheme for the conversion of various sites in the Rhondda area into playing fields, as proposed by the Rhondda Area Council of the National Playing Fields Association, is adopted. About sixty-six acres of land have been scheduled for the purpose, and the estimated cost of laying this land out as playing fields is £45,000. Of this sum it is hoped the Ministry of Labour will provide seventy-five per cent., and the Miners' Welfare and the Coalfields Distress Funds the remaining twenty-five per cent. Of the estimated cost of £45,000, the sum of £29,000 is included for wages.

A Colonial Agricultural Service.—Following the recommendations of the Committee set up to consider the organisation of a Colonial Agricultural Service, and of the Colonial Veterinary Services Committee, the Secretary of State for the Colonies has appointed a Colonial Advisory Council of Agriculture and Animal Health. Mr. W. Ormsby-Gore, M.P., is the temporary Chairman of the Council, and Mr. F. A. Stockdale, C.B.E., Assistant Agricultural Advisor to the Secretary of State, is the Vice-Chairman. Those that have accepted the Secretary of State's invitation to serve on the Council are:—Lieut.-Gen. Sir William Furze, K.C.B., Dr. A. W. Hill, F.R.S., Dr. G.K. Marshall, F.R.S., Dr. E. J. Butler, F.R.S., Professor T. B. Wood, F.R.S., Dr. W. H. Andrews, M.R.C.V.S., Dr. A. T. Stanton, C.M.G., and Mr. R. V. Vernon, C.B. The Lawes Trust Committee and the Joint Committee on Research in Animal Nutrition of the University of Aberdeen and the North of Scotland College of Agriculture, have been asked to give their consent to Sir John Russell, F.R.S., and Dr. J. B. Orr, D.Sc., serving on the Council. The Secretary of the Council is Mr. G. H. Creasy, of the Colonial Office.

A Revolving Greenhouse.—A unique greenhouse which, by being revolved, will allow the plants in it to be exposed to the sun throughout its course, has been patented in the United States of America by Mr. Albert C. Burrage, the President of the Massachusetts Horticultural Society. Mr. Burrage has erected one at his home, Orchidvale, Beverley Farms, Massachusetts, his intention in designing it being to hasten the growing of his hybrid Orchid seedlings, although it is considered useful for the growing of other seedlings, especially of sun- and heat-loving plants such as Tomatos, Cucumbers and Melons. Whether it is a practicable proposition or not is questionable. Mr. Burrage's structure is twelve feet square, and is balanced over a cistern ten feet in diameter; the roof is fitted with shelves which are stated to be capable of holding 10,000 seedlings, each in a one-inch pot. The wall of the cement well, which is kept partially filled with water, is covered with a thin, iron, channelled plate, the channel containing two-inch steel balls throughout; a corresponding iron plate, the channel of which fits over the steel balls, is fixed to the bottom of the greenhouse portion. The floor of the house consists of central open grating over the well, and cement round the sides; the framework is of iron and heating pipes pass over the water beneath the floor; the house is also fitted with roller blinds. By means of the ball-bearing fitting, the whole superstructure can be rotated easily. Mr. Burrage has written to each of the many horticultural societies of which he is a member, granting to each member of them a free license to build this patented greenhouse for his own use. Mr. Burrage is a member of the Royal Horticultural Society and The Orchid Club in this country. It is interesting to note that, so far as can be ascertained by a search through the records of America and Europe, no revolving glass greenhouse has ever been built previous to this one designed by Mr. Burrage.

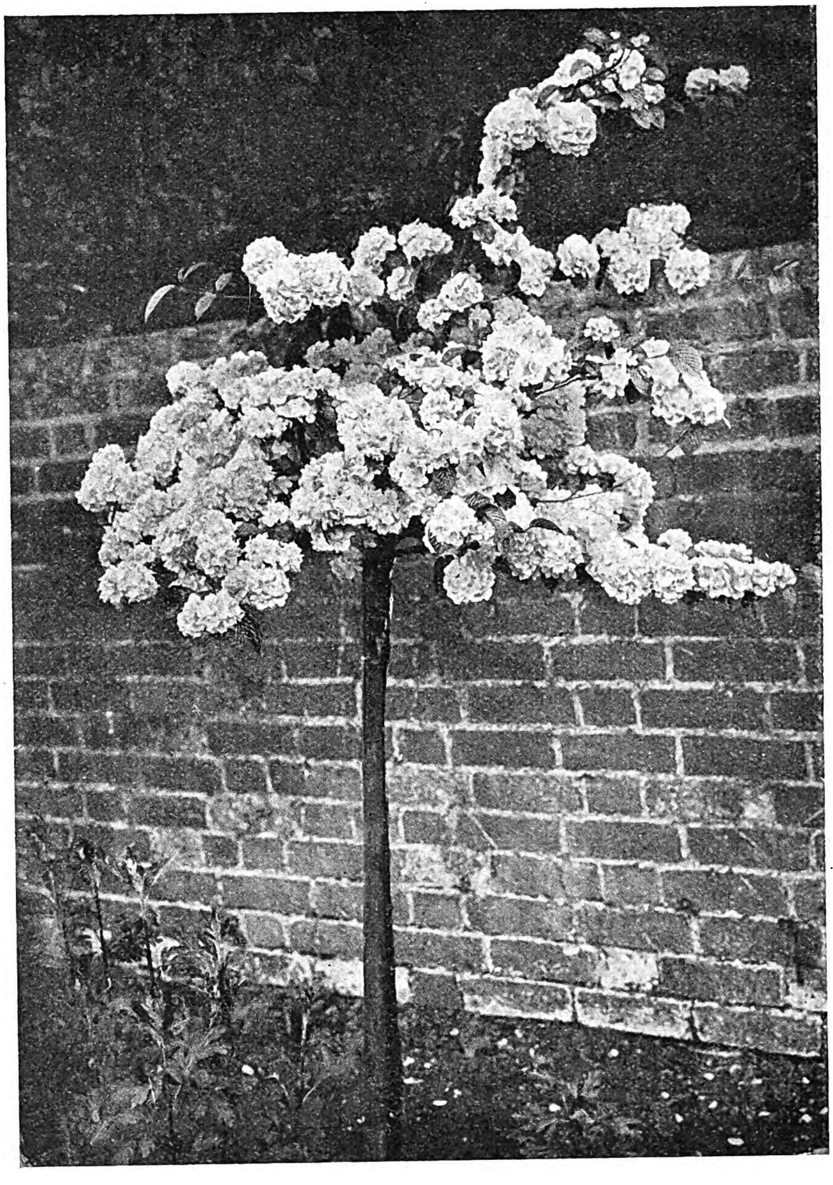

FIG. 115.—VIBURNUM TOMENTOSUM VAR. PLICATUM AS A STANDARD TREE.

(see p. 240).

Appointments for the Ensuing Week.—TUESDAY, APRIL 2: Royal Caledonian Horticultural Society's meeting. WEDNESDAY, APRIL 3: Instow Spring Flower Show; National Carnation and Picotee Society's Show; Wimbledon and District Gardeners' Society's meeting; Rotherham and District Horticultural and Chrysanthemum Society's meeting; Gainsborough Allotment Holders' Association's meeting; North of England Horticultural Society's Spring Show (two days). THURSDAY, APRIL 4: Bideford and District Horticultural Society's meeting. FRIDAY, APRIL 5: Manchester and North of England Orchid Societys' exhibition; Dundee Horticultural Society's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Grape-growing.*—I send you a list of the weight of Grapes cut in an old lean-to house here during the last four years. I may say that for years there were not 12 lbs. of good Grapes cut in it; and as it has been brought to its present state of fruitfulness by following the directions given in your paper, I think it right to give it publicity. The house is thirty-six feet long, eleven deep and thirteen high—no other fruit in it except Grapes, which are principally Black Hamburgh, and trained on the rod principle. Last year was the first year there was any fruit on the back trellis, the vines having been only planted on it the year before. The produce was as follows, all carefully weighed, and good weight given:—128 lbs., 1850; 158 lbs., 1851; 201 lbs., 1852; 234 lbs., 1853. *E. F. L. Donaghadee, Co. Down. Gard. Chron., April* 1, 1854.

Publication Received.—*Starting Early Vegetable and Flowering Plants under Glass*, by Charles H. Nissley. 302 pp. with illustrations; The Orange Judd Publishing Company, Inc., New York. Price $3.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Mexican Laelias.—The members of this gracefully flowered group of late autumn and winter flowering Orchids, among them being L. anceps and its numerous varieties, L. Gouldiana, L. albida L. rubescens, L. autumnalis and L. superbiens, have been resting, after flowering, in a cool, airy position and are now showing signs of renewed activity at the roots; being sun-loving Orchids, the increased sunlight will prove beneficial and bunches of new roots will be produced from the base of the last-made pseudo-bulb. Any plants that require fresh rooting material should receive attention. This is best done so soon as possible at this stage to avoid injury to the fleshy roots, which often occurs if the operation is left until the plants are in active growth at a later date. Annual root disturbance is not advisable, and unless the plants have overgrown their receptacles, or are overcrowded and impoverished, they need not be disturbed; under such conditions all that is necessary is to remove any sour soil and replace it with fresh compost consisting of Osmunda fibre and a little Sphagnum-moss, inserted firmly among the old roots. Where repotting is necessary, the plants should be turned out carefully and all old compost and decayed roots and pseudo-bulbs removed, retaining two or three sound pseudo-bulbs to each lead, which may be potted separately, or several arranged together to form a compact specimen. Baskets or pans are the best receptacles, and the Osmunda fibre should be used in a fairly coarse state, with some chopped Sphagnum-moss added, together with some lump charcoal to keep it open. Firm potting is essential. Very little water is required until the roots are well established in the fresh compost, and the plants will thrive if suspended in a light position in the intermediate house, and sprayed lightly on favourable occasions to encourage root action. Any shading should be removed early in the afternoon, and the plants and surroundings well syringed with tepid water while the temperature is rising. A free circulation of air should be allowed on all favourable occasions, especially at night.

Seedling Dendrobiums.—With the increase of sunheat, the small seedling Dendrobiums are growing well and new roots are being produced. Those plants requiring a larger pot or fresh rooting material, consisting of three parts Osmunda fibre and one part moss, should be attended to forthwith. Quite small receptacles may be used for these seedlings, which should be grown in a light position in the warmest house, where humid surroundings are maintained, and as the roots and growths advance the compost should not be allowed to remain dry for long periods, especially during bright weather. The bulbs should be supported, and every encouragement given to assist the plants to grow freely. Light shade should be given from very strong, direct sunshine, to prevent the foliage from being scorched.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Melons.—Unless fermenting material has played an important part in maintaining bottom-heat and atmospheric moisture, cold nights and absence of sun have rendered the employment of fire-heat absolutely necessary. The Melon plants have not made the progress they should have done, and great care will have to be taken to prevent red spider attacking them. If previous directions have been carried out, the final top-dressing of Melon plants in pots or borders should be performed when the fruits are the size of chicken's eggs. Feeding from this stage onward must be on a liberal scale until the fruits attain full size, and the more frequent the change of food the better the progress and the finer the fruits. The night temperature should range about 70°, and by day 80° to 85°, and 90° to 95° after closing, should be aimed at. Advantage should be taken of sun-heat, and moist conditions maintained. Remove all useless spray, and preserve all premier leaves, and pinch the lateral growths at the first joint after the fruit. Follow previous instructions with succession plants. Day and night temperatures may be increased on bright, sunny days when air may be admitted. When in free growth the plants require liberal supplies of tepid water, stimulants being reserved for the swelling of the fruits. Top-dressings with compost previously warmed should be applied as the roots appear on the surface. Where Melons are grown in pits heated with fermenting manure, now is a good time to commence operations. Fresh stable litter and equal parts of Oak and Beech leaves should be well mixed together and turned two or three times before making up the beds. Sow the seeds in small pots, and by the time the plants are ready, violent heat will have subsided and the ridges of compost will have become thoroughly warmed through, when planting may be carried out. Rich, or too light soils, should be avoided, or strong growth may follow and few fruits will be produced. Melons cannot have too much light and sun-heat. Two plants to a light is sufficient. Place more compost firmly around the plants as growth advances and the roots appear. With this treatment, ripe Melons should be obtained in about fifteen weeks.

Melons in Frames.—These do not require one-fourth of the soil frequently given to them; it is a good plan to place two rough boards a foot or more in width on their edges, and about eighteen inches apart, in which to place the top-dressing material. Covering with dry mats every night at this early season is of great assistance, and cold water should never be used to damp either the foliage or the surface of the bed. Any damping or sprinkling necessary should be done early on bright, warm days; this requires some judgment, and unless the heat can be maintained it should be omitted.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Gladioli.—Gladioli require a smaller amount of attention than many flowering plants, and by planting the corms at frequent intervals from March to May, the season of these useful flowers may be extended considerably, while there is such a wide range of colours and types that a useful selection may be made for any purpose. The principal requirements are a well-drained, deeply-dug, fairly rich soil, and an open, sunny position. The corms of the large-flowered varieties should not be planted at less than one foot apart, and the more slender forms of G. primulinus may be spaced about nine inches. The depth of planting will depend on the nature of the soil, three inches being deep enough in heavy soils and from four to five inches in those of a light nature. If the soil is heavy and retentive, it is advisable to place a little rough grit or sharp sand under and around each corm. Where Gladioli are to be used in conjunction with summer bedding plants and cannot be planted in their flowering quarters until the spring bedding display is past, the corms should be potted singly into five- or six-inch pots during April, and if stood in the open, they should make ideal specimens for furnishing the flower garden at bedding-out time. With their sword-like leaves they are admirably suited for bold grouping in the mixed border. The choice of varieties and sections is a matter of individual taste, and the purpose they are required for. For massing, the bolder flowers of the gandavensis hybrids are much sought after, but for flowers of refinement none compare with those of the primulinus group, whose charming, hooded flowers may now be had in a wide range of colours.

Violas.—The Violas that have been in cold frames all the winter may now be placed in their flowering quarters. These useful bedding plants like a position where they are partially shaded from the midday sun, and under such conditions the period of flowering is lengthened considerably.

Spiraeas.—The shrubby Spiraeas that bloom in summer may be pruned fairly hard to keep them dwarf and to encourage the production of a plentiful supply of vigorous young shoots which will flower freely. Such sorts as S. japonica, S. japonica var. Anthony Waterer, S. j. Bumalda, S. Douglasii, and several others, are included in this group.

Pruning Newly-planted Roses.—Newly-planted Roses should be pruned very hard the first season, irrespective of the group they belong to. Unless this is done there is apt to be a long bare gap between the ground and the first break. The object of this hard pruning is to encourage the production of strong, basal shoots, so that a good foundation is made to build up shapely bushes in the future.

Pruning Rose Species—Rose species require little pruning, the removal of weak, and old, worn-out wood being all that is required. This may be attended to now if not already done, but it is usual to thin the growths immediately after flowering or during the winter.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Strawberries.—These have suffered very badly owing to the severe and prolonged frosts of February, when we registered 25° and 27° on the 14th and 15th, respectively. Many crowns have succumbed completely, especially those that were partly exposed above the soil. Those that were well moulded up with soil last autumn have not suffered so severely. I notice, too, that the variety Royal Sovereign appears to have suffered less than the varieties King George and The Duke. The soil is working wonderfully well, and the first opportunity should be taken to draw up a little of the finest mould around the basal leaves, to encourage the production of adventitious roots. Where young plants have been raised out of the ground by the frost, they should be pressed in again by hand, and every possible attention afforded them this spring if they are to pull through.

General Work.—Examine autumn and more recently planted fruit trees, treading well around any that may have been loosened by wind or frost, and see that no stake or support is injuring the bark of the tree. It is not too late to prune established trees, but the sooner this work is completed the better. In the light of modern research, late pruning is considered advantageous because cuts made in late spring heal up much more rapidly than early ones, and on leader growths more lateral buds develop than is the case when the pruning is carried out in the depth of winter. With Apple and Pear trees planted last autumn or early winter, the leader growths should not be pruned until the sap is flowing freely, when they should be cut hard back to dormant buds. The weather has been ideal for the destruction of weeds in the fruit quarters, especially where the soil had been moved just prior to the hard spell. The soil is crumbling at the least touch, making it much more easy to fork out Couch and other pernicious weeds. In working among some Gooseberry bushes this week, I found the larvae of the magpie moth, apparently quite uninjured by the recent severe frost; and later I was shown the larvae of the Cabbage moth. This shows the powers of endurance possessed by these grubs in winter. In making a general survey of our fruit trees, there is every reason to anticipate heavy crops of most fruits this year, the exception being Strawberries, which are distinctly poor. Apples and Pears are very promising, as also are Plums. The blossoming period for Plums, which is usually round about March 20, will be quite a fortnight to three weeks later this year. This is all to the good. Raspberries and Black Currants are looking particularly well and clean. Gooseberries and Red Currants, where they have been left unprotected by black cotton, have suffered badly from attack by tits and sparrows. In some cases the birds have stripped the bushes of almost every bud. I have never known the meshwork of black cotton to fail and it has been given a good test here this season.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain,
Brocket Hall, Hertfordshire.

Chrysanthemums.—The young plants that were raised early from cuttings and are being grown to produce large exhibition blooms should now be ready for potting into thirty-two-sized pots. The compost for this potting may consist chiefly of good fibrous loam, to which may be added short manure—that from a spent Mushroom-bed being suitable—bone-meal, wood ash and coarse sand, with a dusting of an approved fertiliser. The compost should be thoroughly mixed by turning several times, and it should be in suitable condition to allow of fairly firm potting. The plants, when potted, may then be stood in a cold frame, allowing plenty of space between each plant; the frames should be kept close for a few days to assist the plants to establish themselves, after which air may be admitted freely on all suitable occasions, removing the lights entirely on fine, mild days. Give good soakings of clear water when required. On cold nights they will need covering with mats or other protecting material. When preparing the compost it is advisable to mix sufficient for this and the final potting. This will save time, and the compost will be in better condition if prepared in advance. There are certain varieties of Chrysanthemums that require stopping next month in order to secure the buds at the proper time to obtain large exhibition flowers; among these sorts are Queen Mary, Princess Mary and Victory. These may have their tops removed about the third week in April. Majestic and its sports, Mrs. G. Drabble and William Rigby, should be stopped during the second week in May; these dates are those which I go by to obtain exhibition flowers for the second week in November, securing the first buds from the breaks. Another means of obtaining good exhibition Chrysanthemum flowers is to root the cuttings about the second week in April in a cold frame, and grow them on single stems in six- or seven-inch pots, securing the first buds; grown in this form they are excellent for grouping purposes.

The Conservatory.—At this season of the year an abundance of material is available for the decoration of the conservatory. With the lengthening days the sun is gaining more power, and shading should be practised during periods of bright sunshine.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder,
Knowle Gardens, Dunster, Somerset.

Peas.—Another sowing of Peas may be made to maintain a succession. Pea seedlings just above ground should have sticks placed to them; the sticks shelter them from wind and frost at this stage. Gradus and Duke of Albany are two suitable sorts to sow now, and these do well in most districts.

Turnips.—Early Snowball Turnips may be sown now in the open in a warm position. Any Turnips still in the ground should be lifted and placed in ashes and the ground dug in preparation for another crop.

Spinach.—A further sowing of Spinach may be made, and when the seedlings are well advanced thin them carefully. If plenty of space is allowed between the plants much finer leaves will be produced than if they are allowed to become crowded.

Celery.—The seedlings from seeds sown some few weeks ago for early work will now be ready for pricking off into boxes or three-inch pots, in a compost of good loam, leaf-mould and a little sand. Grow them on in a steady temperature, spraying the young plants overhead and never allowing them to become dry at the roots, or this will cripple their growth. Celeriac may be treated in the same manner.

Carrots.—Seeds of Long Red Surrey and James' Intermediate Carrots may now be sown in deeply dug soil. Previous to sowing the seeds the soil should be forked well and the surface made fine; if the soil is at all wet it is better to defer this sowing until conditions are suitable. If a dressing of 9 lbs. Sterolena to 112 lbs. of finely-sifted lime, well mixed together, is spread evenly over the ground before it is dug, it will be found beneficial in warding off Carrot root maggot. Sterolena is much safer and more effective in destroying grubs in the soil than sheep dip or paraffin; if exhibition Carrots are grown in specially prepared holes, this preparation may be mixed with the soil with which the holes are filled.

Crops in Frames.—The surface soil of the beds of the various vegetables and salads in frames should be stirred frequently, and on fine days an abundance of fresh air should be afforded; the air should be admitted evenly throughout the frame, pulling up every alternate light and pushing down the others.

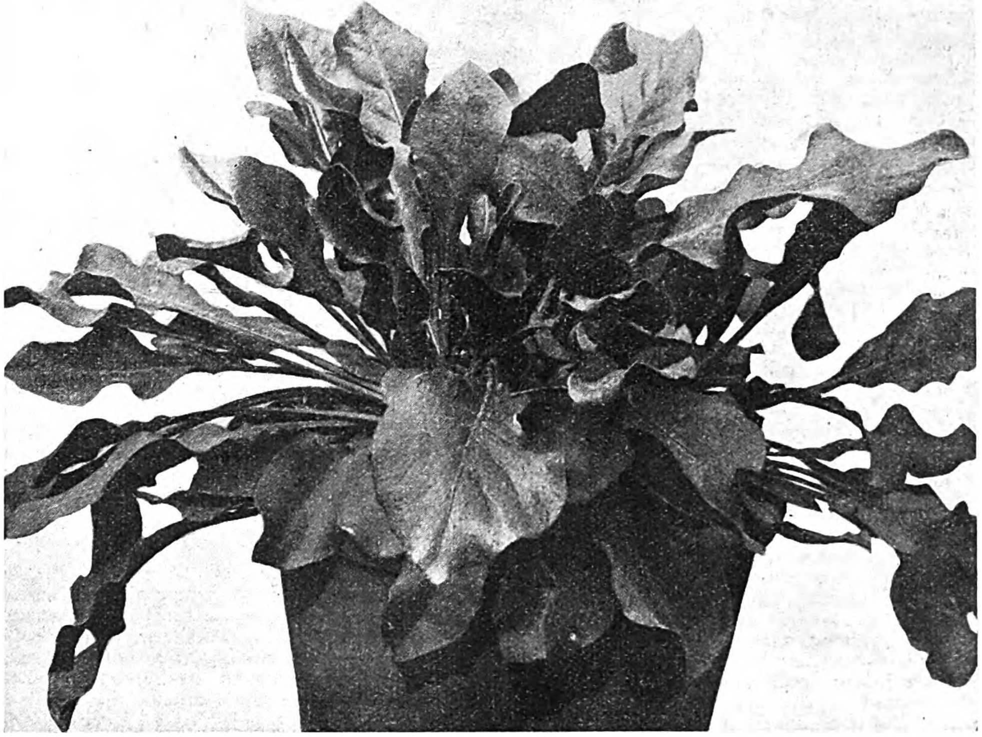

FIG. 116.—STATICE PROFUSA IN A SEVEN-INCH POT.
(see p. 241).

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq.,
Rosemount, Monkton, Ayrshire.

Main-crop Celery.—Being one of the most important crops, this deserves special attention. Celery should be grown without a semblance of a check at all stages, or it may run to seed prematurely. Any good red variety may be sown now in light soil, consisting chiefly of leaf-mould and sand, with enough loam to give it body, and placed in heat. After germination remove the seedlings to a cool house or frame, and prick them off when the first rough leaf appears, boxes being the best receptacles. They should be placed in a warm house for a few days to establish them, and then returned to frames. When they have grown together, transplant them into shallow frames, in a bed of soil three inches deep over a good layer of old manure, with a hard ash bottom. Plant the seedlings four inches or so apart, and when they are established remove the lights entirely. Give abundance of water at all times, and a week before planting, run a knife lengthwise and crosswise through the soil between the plants, touching the ash bottom, when they should lift in blocks and feel no check whatever. On heavy or wet soils make the trenches shallow and allow plenty of space between them to afford soil for earthing up. Treat generously as to manure, but over feeding makes the growth soft and hollow, and prevents long keeping.

Peas and Beans—Sowings of these for succession should now be made at intervals of ten or twelve days, and in most localities it is safe to sow wrinkled or Marrowfat Peas early in April. Early sowings should be thicker than usual, but if all the seeds germinate, thinning should be practised.

Winter-flowering Carnations.—If these plants, which have been flowering all the winter, are not responding to the longer days by making satisfactory growth, they should be repotted at once. See that they are thoroughly wetted at the roots a day or so before repotting. The soil should consist of four parts good turfy loam, one part old cow manure in a rather dry state, half-a-part sand, and half-a-part mortar rubble and burnt soil or charcoal, with a dusting of Carnation manure. Turn out the plants, reduce the old ball slightly, or severely in bad cases, and return to the same size pot or a smaller one. Pot them rather firmly, but do not employ a rammer. Shade them from sunshine for a few days and spray them overhead twice a day for a week or so; apply water at the roots only when absolutely necessary.

Autumn-sown Sweet Peas.—If these have been grown quite cool, they should now be planted out, the ground having been previously well prepared and allowed to settle. Short sprays of Spruce or such like should be placed around them, to steady them, and also to afford shelter from cold, cutting winds. If slugs or snails are troublesome, bran, slightly wetted and coloured with Paris green, should be sprinkled, close to, but not on, the plants; this is usually effective in killing the pests, but after heavy rain the application must be repeated if the pests are still troublesome.

LATE PLANTING IN THE PRESENT SEASON.

There is an adage, uttered by sages of old, that "he who plants early may sleep in peace, while he who plants late may be kept awake by the groaning of his plants," and probably no season within the memory of present-day gardeners has given cause for so much groaning, if one may use the metaphor, as the present one. It is an old story that the late planter comes when the nursery quarters have been picked and picked, and the best plants are gone; when the ground has become cold, and frost and snow alternate with dry east winds to stop the work; and when the excitements of spring are near at hand, but winter still reigns to increase the hazard of exposing roots to the atmosphere, and nothing could more emphasise the advantages of autumn planting than the present season.

But, well as the practical gardener realises the advantages of early planting, circumstances nearly always compel him to do some late planting, and in a season like the present one, when planting was impossible for so many weeks, there must of necessity be large arrears of planting to be done this spring in most gardens. Recriminations are thus of no help, and the planter has to face the disadvantages of late planting and study how best to ensure the welfare of the material to be planted, whether shrubs, trees or herbaceous plants. And despite all there may be against late planting, it is sometimes impolitic, even if possible, to complete planting in the early season, for the good, heavy soils in which trees of almost all kinds thrive best are not infrequently so water-logged the whole winter through that planting cannot be done properly until the March dust is blowing, and even this would be preferable to pasting the trees into waterholes, as might be necessary where early planting is insisted on.

With regard to material planted immediately before the adverse weather conditions set in, I see no reason why it should suffer abnormally if it receives attention so soon as the thaw is complete. The up-lifting power of frost is well-known, and the roots of all newly-planted subjects should be thoroughly rammed so soon as soil conditions allow. Frost has penetrated to an unusual depth, however, and the soil should be tested to ensure that the thaw is complete before this ramming is undertaken.

Many gardeners will have received consignments which they were unable to place in position before the frost stopped ground operations, and have kept them in some position of protection awaiting the thaw. These will be in an advantageous position, for ground that was previously prepared for planting has been left by the frost in excellent condition for facilitating the operation, the friable nature of the surface soil making it easy to lay the roots out and cover them to the best advantage, but thorough consolidation and secure staking of large trees, to prevent any possible "pulling" of the roots, are essential factors to success.

Those who have to wait for the delivery of their plants from the nurseryman are less advantageously placed, but the position is not hopeless. The calendar is not the governing factor in planting, and one season may see growth so far advanced at the beginning of March as it is at the end of that month in another season, thus the retarding effect of the long period of frost, and the fact that, except for a "fleeting heat-wave," the average temperature since the thaw has been relatively low, have resulted in extending the time for successful planting.

Even after all the factors governing good planting have been observed, the mortality among late planted subjects is generally greater than that among early-planted ones, but the most potent cause of loss is lack of moisture at the roots just as new rootlets are being emitted. Thus it appears to be more than ever necessary after planting is completed this spring to study rainfall, and should we get a period of drought, to see that recently-planted subjects are assisted with copious waterings and, wherever practicable are mulched to conserve moisture. Another old writer stated that trees planted before Christmas will grow without being looked after, but those planted between Christmas and Lady Day must be coaxed to grow, while those planted after the latter day must actually be compelled to grow. There may be an element of truth in this, but the planter who has observed every good rule of planting, except the date, will not fail to give his subjects the necessary after-attention to compel them to grow. *W. Auton.*

TREES AND SHRUBS.

HELIANTHEMUM UMBELLATUM.

It has been very gratifying to find that all old specimens of this charming Sun Rose survived the recent frost, which is the more remarkable when it is realised that most of them were in active growth when the hard weather came along. The budded tips were, of course, cut back, but this is a trifling matter compared with the havoc among allied species and garden hybrids.

H. umbellatum is one of the most delightful and distinctive of its race. It is a loose-habited, semi-procumbent little bush of about eighteen inches in height and two to three feet across. The dark green foliage rather suggests that of Rosemary, with the result that it is still often listed as H. rosmarinifolium, a name belonging to another species. The flowers, borne in terminal, erect racemes, are white with a yellow stain at the base of the petals. They are not so large as those of most Sun Roses, but are produced in great abundance in spring and early summer and, as often as not, in autumn. In fact, there are very few months of the year in which H. umbellatum is entirely without some blossom, and the firm, pure-white of the cup-shaped blooms has a telling background in the deep green foliage.

This Sun Rose is a native of southern Europe, and has been in cultivation here for nearly two centuries. It is very easily grown in any light, stony soil with full sun, and may be increased by cuttings as readily as any of the rest of its race. I have found this little shrub remarkably permanent, carrying-on without attention for many years and never becoming leggy and ungainly as do so many of its kind.

CISTUS CORBARIENSIS.

This is one of the few Cistuses which have come through the past winter without serious injury. It is said to be a natural hybrid between C. populifolius var. narbonnensis and C. salvifolius. To some extent it partakes of the character of both parents, with a leaning towards the former save in the much smaller size of all its parts. C. corbariensis is a useful Rock Rose for grouping on hot, sunny banks in Heath gardens and such places. It may also be grown in thin woodland, since it does not object to partial shade. Making a well-rounded, rather dense, leafy bush of about three feet in height and four feet across, C. corbariensis is a delightful object when covered with its innumerable flowers. These are borne from June onwards in small clusters, each blossom being one-and-a-half inch across and pure white with a yellow stain at the eye. The ovate, rather pointed leaves, up to two inches long, are a full-toned green and have wavy, slightly-toothed margins. The younger growths are often of a reddish tint, as are those of C. populifolius, this giving the shrub a ruddy, or sunburned, appearance.

I have found C. corbariensis not only very hardy, but a good doer under any average conditions, and regular and abundant flowering. It may not be much, if any, longer-lived than other Cistuses, but it retains a shapely, compact form throughout.

The only trouble that I have ever had with this, as well as with other Rock Roses of its class, is this: It is liable to get loose at the root and to be blown over so soon as there is a good head of growth. This may not occur when the root-hold is rocky, but in any event it is possible to avert such disasters by grouping the plants fairly closely so that they will touch one another when rather more than half-grown. In this way one also gets a better effect, it being the natural habit of most Cistuses to grow in dense colonies. *N. Wales.*

VIBURNUM TOMENTOSUM VAR. PLICATUM.

More commonly known as merely Viburnum plicatum, this beautiful variety of Viburnum tomentosum is one of the most attractive members of the genus, and it probably ranks among the best dozen deciduous flowering shrubs that we have.

The Japanese Snowball Tree, as it is popularly termed, is not uncommon in English gardens, for it is easily grown, quite hardy, and very accommodating, while it responds well to training and is especially handsome when grown as a standard (Fig. 115); it is also grown extensively in conservatories, as it may easily be forced into bloom early and is very effective under such conditions.

The inflorescences of V. t. var. plicatum are composed completely of sterile blooms, a fact responsible for its striking beauty; the crowded inflorescences, pure white and about three inches across, vary from a flattened to almost a globose umbel; they are produced so freely that, in June, the plant is often transformed into a striking, unbroken mass of white. It was introduced from China by Fortune so long ago as 1844, but it is only in comparatively recent times that it has come to the fore as a first-class flowering shrub; no shrub border should be without it, while, when trained as a standard, it makes an ideal specimen plant.

This Viburnum, like the majority of its relatives, may be propagated quite easily by cuttings, and it flourishes in good, deep, loamy soil; it is considered hardier than the type, V. tomentosum. *F.*

ROSE GARDEN.

LATE-FLOWERING ROSES.

One of the charms connected with the Rose is its extensive period of flowerng. It is no uncommon thing to have Roses in bloom from June to Christmas, in fact I have gathered half-a-dozen good-sized buds on New Year's Day. This is remarkable, for my garden is situated in a cold, exposed position on the Derbyshire hills, and Roses that will bloom under the trying conditions here are likely to do the same elsewhere, especially where shelter from cold winds is available.

The plan I usually adopt with late Rose buds is this:—I gather all the buds when they are still hard and open them slightly, but carefully, with the finger and thumb; I then put them in hot water and stand them near a window where they may obtain plenty of light, in a warm room. The buds respond quickly to the light and warmth, and develop in an astonishing manner. In removing the damaged outside petals, some gentle fingering is required, so as not to tear them right off, for if these are completely detached, the inner ones are likely to fall off, too, when the buds begin to open. It is safer to cut the petals away with scissors, leaving the extreme base of the petals as a support to those left.

After many years of experience, I still consider the following Roses are the best for late flowering:—Frau Karl Druschki, will last in bloom until severe weather stops it; A. R. Goodwin is very free-flowering and one of the best Roses in the garden; Lady Roberts is an excellent Rose, although paler in colour than the earlier blooms; Hugh Dickson is rich and free, and one of the best; Mrs. John Laing is a good Rose for keeping its size; Killarney, although often a victim to mildew, is profuse in the production of flowers; Climbing Mrs. Grant produces its large-size blooms freely; Homère, flowers well into December, its blooms being of good size and freely borne; Frau Lilla Rautenstrauch is a charming late Rose with richly-coloured blooms; Mrs. Aaron Ward produces good flowers throughout the season until December; La

France is an excellent Rose in dry weather, but a wet season spoils it, and Lady Ashtown and Caroline Testout are both good late-flowering sorts.

Space will not permit of a large selection of autumn-flowering Roses, but the following are well worth cultivating:—Molly Sharman-Crawford, Ben Cant, Francisca Kruger, Kaiserin, Augusta Victoria, Général Jacqueminot, Madame Lambard, Marie van Houtte, Lady Hillingdon, Madame Abel Chatenay, Lyon, Richmond and Liberty. *A Nurseryman.*

INDOOR PLANTS.

STATICE PROFUSA.

I was interested in the note on the propagation of Statice profusa (p. 193), particularly as I have grown this subject for many years, and have found that ringing forms the best method of increasing stock. An old plant, three years or four years old, will carry from ten to twenty good heads and provide an equal number of good plants if each stem is ringed during March or April and mossed up as shown in Fig. 117. After such treatment roots are made freely, and each head will be ready to be potted into a six-inch pot by the end of the summer. The second illustration (Fig. 116) shows a plant in a seven-inch pot, the result of ringing in April, 1928. Statice profusa is a most useful subject for conservatory decoration and quite easily managed. *Thomas Elder, The Gardens, Old Place, Lindfield, Sussex.*

PERPETUAL-FLOWERING CARNATIONS.

Such rapid strides have been made in the culture of Perpetual-flowering Carnations during the past quarter-of-a-century, that to-day they probably rival the Rose in popularity. Yet, in spite of numerous novelties introduced each year, there are certain of the older varieties that more than hold their own at the present day, both with market growers and in private establishments; of these, May Day, Lady Northcliffe, Mikado, Baroness de Brienen and Enchantress are to be met with everywhere in the Carnation world. Undoubtedly, in a large majority of private establishments certain varieties that find favour with the owners are grown in larger numbers than less favoured sorts, but where quality is the first consideration and the gardener has the opportunity of choosing the varieties to be cultivated, and should he desire to keep his collection up-to-date, he may at times be at a loss to know which varieties to discard to make way for newer introductions.

Of the white-flowered varieties in cultivation, White Pearl is undoubtedly the largest but, unfortunately, it is very slow-growing, although robust and possessing a strong scent; for the latter reason alone it should be in every collection. White Wonder, an older variety, strongly-scented, and the newer Tess, are also worthy of inclusion.

There are many light pink sorts, but pride of place falls to Laddie, a magnificent variety with long, strong stems and a large flower of good substance and perfect calyx, the plant itself being of vigorous growth. Eileen Low is another grand variety, and deserves a place in every collection, while Baroness de Brienen, May Day and Lady Northcliffe are well-known market varieties that cannot be dispensed with, Lady Northcliffe being especially suitable for market and it work as it lasts particularly well when cut, is probably grown more than any other variety.

Of the medium pink sorts, Betty Jane is to be recommended, for it has long, wiry stems and a perfect calyx, and it also flowers well in winter. Hebe is a delightful salmon-coloured sort, strongly scented, with the edges of the petals fimbriated like those of the old favourite Rose Don. Mary Allwood is another popular variety, the colour of its blooms being a cherry-salmon that shows up well in artificial light; its flowers are large, well-shaped and smooth-petalled.

Betty Lou is one of the finest in the deep pink section, its blooms being a rich, deep rose; while Master Michael Stoop is a vigorous grower with large flowers, and Peerless is exceptionally free-flowering and a profitable variety for market work; both these latter have deep rose-pink blooms. Of red varieties there are many, but few approach the much wanted scarlet. Aviator is the brightest yet introduced, but the flowers are hardly large enough for exhibition work, although for its colour and free-flowering qualities it should be in every collection. Tarzan and Spectrum are both large-flowered, brightly-coloured varieties that keep their colour well during the winter, the latter probably being the best red yet in commerce, from an exhibitor's point of view. Red Laddie—a sport from the well-known Laddie—is identical with its parent in all but colour, and for this reason alone should be grown extensively. Bis Greenfield, a variety not listed by most nurserymen, is a grand Carnation of robust habit, with large, bright flowers and a perfect calyx; it suggests a perpetual-flowering Malmaison.

Crimson Perpetual-flowering Carnations are not so numerous, the favourites being Topsy, a delightful dwarf, free-flowering variety, good in every way, and Mrs. A. J. Cobb, with large, well-shaped blooms, that won the *Daily Mail* Gold Cup in 1927 as the best-scented variety. Triumph, an older sort, is still probably the brightest crimson, while Nigger is excellent for market work and is strongly scented. Mikado, despite its age, more than holds its own in the heliotrope section, it being one of the best winter-flowering varieties, with a long, wiry stem and perfect calyx, and very fine "grass," by which it can be distinguished from all other varieties. Unfortunately, Mikado seems rather prone to attacks of rust, more so than any other variety, except, perhaps, Sunstar, Orange Sunstar and Saffron. Mary Pearson is also worthy of inclusion in this section, being an exceptionally strong growing variety with a large flower, delightfully scented. There is still a need for a really good yellow, the nearest approach to pure yellow being Saffron which, however, is occasionally streaked with white. This variety, however, with Maine Sunshine, constitute the best of the yellow section.

Those who find delight in Fancy Carnations have a wide range to select from, the best of the white ground Fancies being Charity and Lady Hindlip; the former is of grand colouring, with a whitish ground, flaked and speckled claret. Lady Hindlip, white, pencilled red, is exceptionally free-flowering all the year round, and should be in every collection. Citron, a citron-yellow sort, with rosy-pink markings, is a delightful 1928 novelty and is worthy of extensive cultivation on account of its unique colouring alone. Sheila Greer, bright yellow ground, striped red, makes an attractive vase and is very free-flowering, while Jazz, with its flowers of light orange, heavily flaked deep pink, is particularly effective in artificial light. Melchet Beauty, heliotrope, with cerise markings, is a delightfully free-growing and sweetly scented sort which flowers well all the year round, and Shot Silk has very attractive colouring, Indian-chestnut, flaked red, but it is, unfortunately, a rather shy grower. Sybil and Queen Mary are two deep violet-purple varieties, quite distinct from any others, which deserve to be grown by all. *A. J. Turner.*

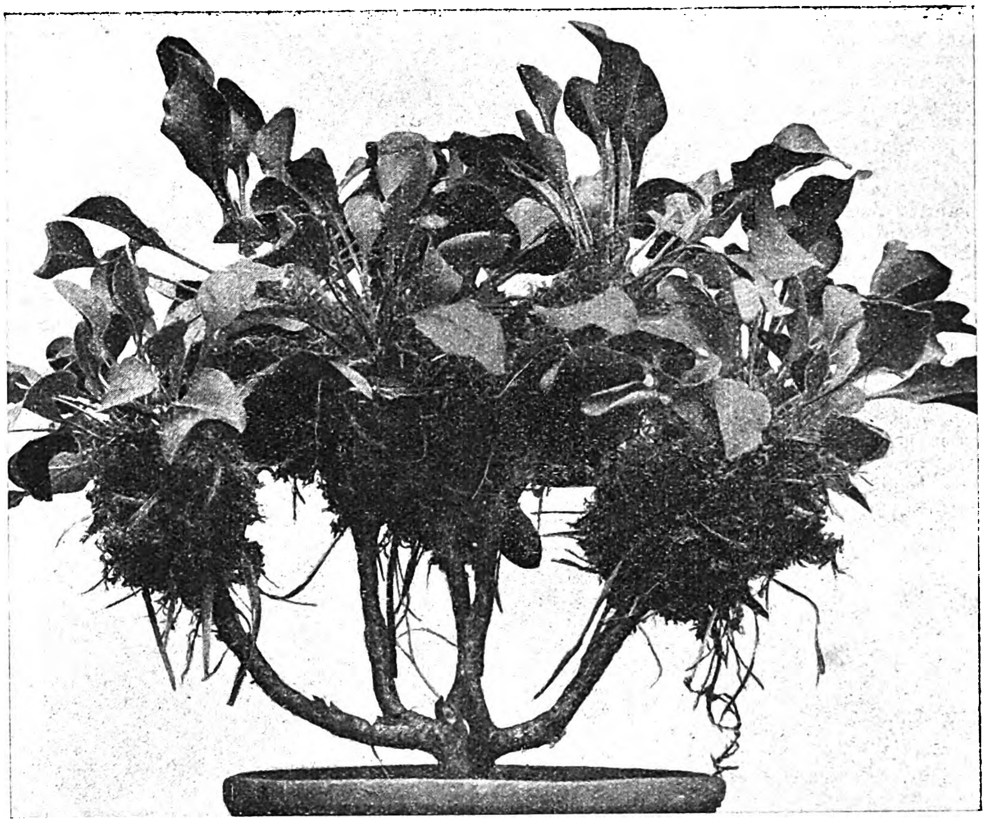

FIG. 117.—STATICE PROFUSA.

A three-year old plant ringed and mossed-up for propagating.

WOODLAND GARDEN.

BORAGO LAXIFLORA.

This is an ideal woodland plant, and one that can be very attractive in the bolder parts of the rock garden or the mixed border. It is essentially a subject for associating with others, and since it naturalises freely without being aggressive, it is eminently adapted for such treatment. I find it a charming thing among hardy Ferns and lowly shrubs, especially in shady corners, for although it is a Corsican it seems to do very well with a minimum amount of sunshine.

B. laxiflora makes a squat basal tuft of broad, bristly leaves, and puts forth all summer and autumn a succession of flowering stems. These are slender and semi-prostrate, finding support among neighbouring plants, and they bear deeply-cleft, bell-shaped flowers of a pale, clear azure-blue. Although not a long-lived species, B. laxiflora sows itself as I have indicated, and in this way it will carry on indefinitely in its own quiet way. It is quite hardy and does well in poor, dry soil, even about the roots of woodland trees. *J.*

PLANTS NEW OR NOTEWORTHY.

FRITILLARIA KARADAGHENSIS.

(See Fig. 107, p. 221).

FRITILLARIA (§TRICHOSTYLEAE) KARADAGHENSIS, TURRILL.

SP. NOV. A *F.* crassifolia, BOISS. ET HUET, FOLIIS ANGUSTIORIBUS RECEDIT.

Bulbus subsphaericus, 1·7 cm. diametro, tunicatus. *Caulis* glaber, teres, usque ad 1·7 dm. altus, inferne saepe purpurascens, supra medium 5-8-foliatus. *Folia* subcrassa, linearia vel oblanceolato-linearia, inferne gradatim superne plus minusve attenuata, 5-7 cm. longa, 4-7 mm. lata, subobtusa, glauco-viridia, siccitate intense viridia. *Flos* saepissime solitarius, tubuloso-campanulatus deinde late campanulatus, perigonii phyllis 2·2 cm. longis luteo-viridibus plus minusve purpurascentibus longitudinaliter viride-striatis supra basin nectario ovato foveolatis externis oblongis 0·95 cm. latis internis obovato-oblongis 1·1 cm. latis. *Filamenta* 8-9 mm. longa, basi dilatata, papilloso-hirtula; antherae indehiscentes 7 mm., dehiscentes 3-4 mm. longae, pallide luteae. *Ovarium* cylindricum, 7 mm. longum, stylo ramis tribus viridibus 4 mm. longis inclusis 6 mm. longo.

Bulbs from the Kara Dagh, North Persia, coll. Egger, cult. in Tabriz, early spring, 1928; Gilliat-Smith No. 2213. Also in flower at the Royal Botanic Gardens, Kew, March, 1929.

This new species has been compared above with F. crassifolia, Boiss. et Huet, a species described in Boissier's *Diagnoses II*, IV., 103 (1859), from Armenia ('in Armeniae collibus agillosis prope *Baibout*, Aucher No. 5376, in lapidosus montis *Techdagh* prope *Erzeroum* Huet. de Pavillon'). Afterwards, in his *Flora Orientalis*, Vol. 183 (1884), Boissier added plants from Asia Minor and from Syria, but these appear not to belong to the same species.

Our species resembles in general habit Fritillaria graeca, Boiss. et Sprun., *Diagnoses I*, VII, 104 (1846), a species restricted to the Balkan Peninsula, and figured in *Botanical Magazine*, t. 5052. It differs, however, in the colour of the flowers and the papillose-hirtulous filaments.

From F. aurea, Schott, in *Oesterr. Bot. Wochenblatt*, IV., 137 (1854), collected by Kotschy in the Taurus range, it differs in the colour and markings of the tepals.—*W. B. Turrill, D.Sc., Kew.*

ALPINE GARDEN.

TIARELLA CORDIFOLIA.

THIS charming member of the Natural Order Saxifragaceae is found throughout a large area of the north-eastern United States, and so far north as Nova Scotia. It favours rich, rocky woods, and at its southernmost limits is found only in the mountains.

Eminently suitable for cultivation in the rock garden or border, it is an old and well-tried plant which should not be overlooked when new planting is contemplated. The heart-shaped leaves are sharply lobed and toothed, with a few hairs above and downy beneath. The simple racemes of white, feathery flowers are decidedly attractive, and are produced freely during early summer.

Tiarella cordifolia appears to prefer a rather moist, but not too wet situation, with a rich, well-drained root-run. *T. H. E.*

EARLY-FLOWERING SAXIFRAGA

THE numerous and varied species of Saxifraga include a number that flower early in the year, and as the blooms are often destroyed by stormy weather in early spring, they are best protected by fixing sheets of glass over them, allowing sufficient room for plenty of air, if the full beauty of the plants is to be enjoyed. The alpine house is the ideal place in which to grow these early-flowering subjects, where their charming flowers are not subjected to the inclement weather conditions that very often prevail during the early spring months. If an alpine house is not available, then a span-roofed frame where plenty of air may be admitted forms a suitable structure for the purpose.

The premier position for early-flowering must be given to S. Burseriana and its varieties, this native of the southern Alps and its numerous forms being among the best of the genus, and in the alpine house they will continue to give a succession of flowers from January until other varieties of the Kabschia group come into bloom. S. Burseriana is a variable plant and has many forms which are distinct in flower and foliage. Among the most distinctive will be found S. B. var. major, with broader, spiny leaves and larger flowers than the type; S. B. var. Gloria, a large-flowered form of robust habit; and S. B. var. tridentina, a charming variety from the Dolomites, its large, reflexed petals being slightly waved at the edges. The variety known as S. B. var. crenata is an attractive plant if the best form is grown, the edges of the pure white flowers being beautifully crenated.

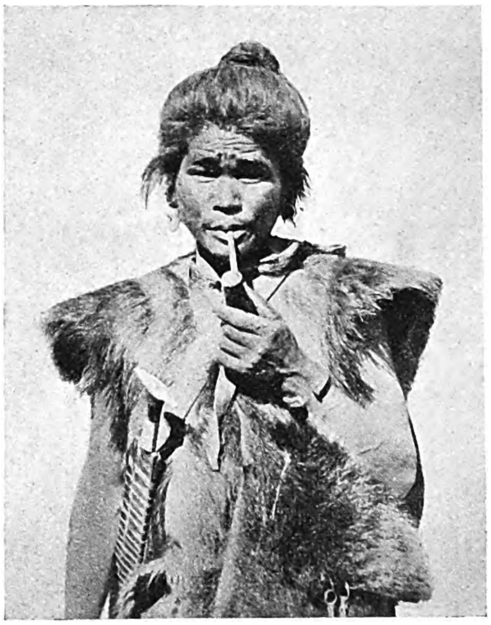

FIG. 118.—THE GAM OF TABLEKEN.

He tried to prevent Mr. F. Kingdon Ward's advance.

Among hybrids which flower early in the alpine house S. Kellereri is quite one of the best, with pretty rosettes of leaves which are pitted and mottled. The flowers are freely produced and borne on stems about six inches high, three and four flowers being carried in a head; the colour is a pale rosy-pink, and the blooms last a long time in good condition. S. kestonensis is stated to be a cross between S. Burseriana and S. marginata, but is a distinct sort, and is often covered with its pure white flowers by the middle of January. S. Sundermannii is a cross between S. marginata and S. Burseriana; it has beautiful, pure white flowers, and extremely attractive, glaucous, pointed leaves. The flowers, borne in heads of three or four, on stems about three inches high, are tinted with red in their young state.

S. Lady Beatrix Stanley is a charming hybrid of compact growth, with beautiful pink flowers; this variety received an Award of Merit from the R.H.S. on March 25, 1924, and is a cross between S. Godroniana and S. lilacina. S. Perle Rose is another of the same cross, and has flowers of a delightful soft pink; while S. Riverslea has much darker flowers, the interiors being of a dark purple-rose colouring. It forms neat little cushions of growths, which are attractive even when not in flower. S. Ada is stated to be a hybrid of S. tombeanensis and S. Burseriana var. crenata; it forms delightful, compact plants, the foliage being of a glaucous hue, while the flowers, which are produced very early, are of a pale rose colour. S. Sparkling is of very dwarf habit, having practically no stems, but like all others of this section, the compact form of growth is most attractive. The flowers are of a bright rose-pink shade. *F. W. G.*

MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XVII.—ANOTHER ADVANCE.

BY the middle of April we had stripped our camp to the bone, and the next advance was fixed for the 19th, fifteen coolies being promised; we needed at least that number if we were to move ourselves in even moderate comfort. But we could never depend upon our transport; three coolies might turn up, or twenty, or none, and from day to day we were left guessing. When coolies did come in, we sent on ahead every load we could spare, or invent, ourselves remaining until the last. During these days we lived in a perpetual upheaval, due to the continual re-packing of boxes and re-shuffling of loads, an art at which Buttercup, as quarter-master, soon developed a vulpine cunning. Our one object was to get on up the valley while the Rhododendrons were in flower and before the rains broke. But to move even our skeleton camp, tents and all, required at least fifteen coolies, for we did not want to repeat the attrition tactics of our last camp, by which we had finally been reduced to travelling in two detachments, without tents or even proper food. That sort of thing is all very well now and again in an emergency, but it is not good to make a habit of it.

At no season is it easy to get coolies in the Mishmi hills; the population is infinitesimal compared with the size of the country, and scattered, and distances are great, or rather, routes are long and devious in the hill jungle. Moreover, scanty and diffuse as the population is, it is in reality concentrated in certain well defined areas—arable valleys to wit, up to a certain definite elevation—and the uninhabited areas of virgin forest are vastly greater. In the spring, when half the able-bodied population is still away, and the other half, together with the disabled, are engaged in the agricultural industry, it is almost impossible. Nor is the Mishmi a willing worker; unlike the more virile tribes of the frontier, such as the Lisu, who seem to thrive on a hard life, or the slave tribes such as the Nung, whose tradition it is to work, for strangers especially, the Mishmi hates work; only stark necessity makes him. At certain times of the year, when nature releases a number of men from the fields (periodical weedings being carried on by the women and children), the unemployed display no anxiety to find work. And in the search for coolies, the village *gams*, although the ultimate and indeed the only source of authority, were almost as casual and unreliable as the independent coolies themselves. Being in unadministered territory—and this is the reverse of the medal—we could bring no sort of pressure to bear, other than that of financial inducement, and coolies just came or not, as it suited them. Our only asset was the somewhat nebulous prestige of the white man, which, to jungle tribes, many of whom had never seen a white man before, did not amount to much. Add to this that our interpreter turned out a complete dud, and was either terrified of the Digaru Mishmis, or in league with them, and our difficulties will begin to be appreciated.

Yet we were not unduly apprehensive. After all, we were moving a good deal of dead-weight about with us, stores and rations for some months, an extra tent, winter clothes, and all the rest of it; once we had dumped this dunnage in some good base camp, and could move with a light camp, things, we assured ourselves, would be different. Alas for that Kruschen feeling! We did not yet know our little Mishmi friends! In short, to anticipate, we reached a certain point in the upper Delei valley (Fig. 120) according to plan, and then found ourselves almost completely immobilised. I should advise any future explorer, who is ambitious to make botanical discoveries in the Mishmi Hills, to provide himself first of all with a light aeroplane of unimpeachable perching powers; he might then reach some of the high peaks.

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; and March 2, and 16, 1929.

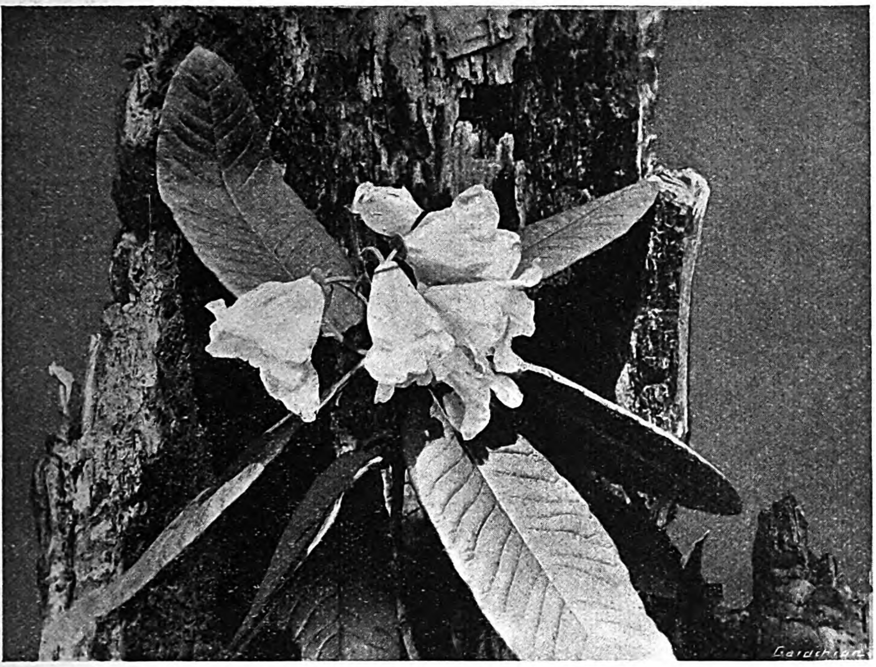

FIG. 119.—RHODODENDRON "BIG BILL THOMSONI."

However, despite our worst forebodings, we did get away from Chibaon on April 19. After passing through the next village, which turned out *en bloc* to see us, we reached a ridge overlooking a deep ravine, the bottom of which was 1,500 or 2,000 feet below us. We could see our destination, a village on the far side, about two miles away in an air line; but it took us the rest of the day to get there.

Buttercups and Forget-me-nots were the chief flowers we noticed along the path and at the top of the ridge, altitude about 5,000 feet, were thickets of mixed shrubs, including the handsome Holly already described and another species whose leaves were produced into flagellate drip tips, and stunted bushes of the 'Stamineum' Rhododendron, pollarded by the wind into neat standards. On the way up to the village across the ravine we found plenty of ripe yellow Raspberries (Rubus ellipticus). The day was fine, but cloudy, and by the time we were under canvas on the hillside it had begun to rain.

Just above our camp a bulge of rock, which ribbed the mountain range behind, curved down and outwards to drop almost perpendicularly into the river gorge. Behind this obstruction, which masked the view up valley from Chibaon, the river changed direction somewhat, curving from the north-east. Once round the corner, we quite expected to see a marked change in the vegetation, Pine-clad slopes instead of this everlasting rain forest; for the mountains to the west and south of us, which lay between us and the plains whence the rain drives inland were piling up both in bulk and in height, and ought by this time to form a pretty effective rain screen, we thought.

After a night's rain, April 20 dawned with the promise of fine weather, and we hastened up the slope to the brow of the ridge, reached just as the sun put the clouds to flight. The view which greeted us was indeed a fine one, but alas for our hopes, there was not so much as a hint of a change in the scenery or vegetation. The Delei river still snaked its way between overlapping buttresses in a gorge 2,000 to 3,000 feet below us. The path still skirted the precipitous flank of the mountain, winding round dark gullies, plunging into ravines, scaling cliffs. And everywhere dense forest clothed the face of the valley. Even the sight of snow-clad peaks towards the head of the valley was not much relief; for how could we reach them unless a change came over the scene! So far as we could see, conditions would continue like this indefinitely, and for the first time since we left Sadiya I began to have misgivings.

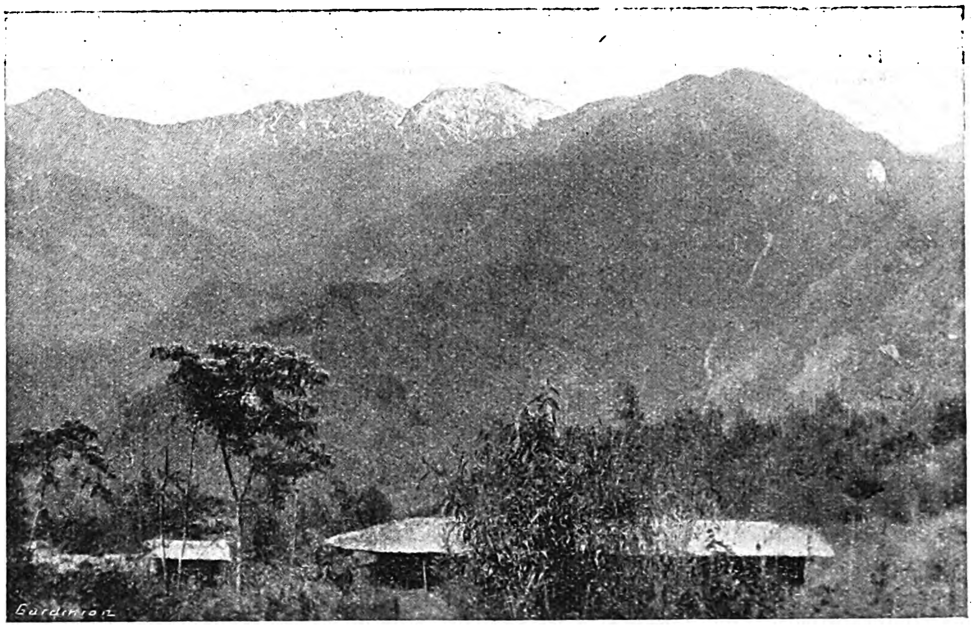

FIG. 120.—A MISHMI VILLAGE IN THE UPPER DELEI VALLEY.

The day's march was long and tiring, the path being execrable. Most of the time we were in forest, the bend of the river throwing the whole of the outer arc of the valley into shadow. Here I noticed a large number of Podocarpus trees, either immature or else males; Rhododendron arboreum, the 'Stamineum,' and on the final spur overlooking the next big stream, 'Big Bill Thomsoni' (Fig. 119) in magnificent bloom. The amethyst Orchid (Phaius) was common, and a small mauve-flowered Veronica. Descending a knife-edge ridge, there were Orchids under the trees and on them, only the former in bloom; among the latter a Pleione—possibly P. maculata—looked promising, also a big Dendrobium. There were a few plants of the slashing red Aeschynanthus here also. Finally, we came out into the open hillside and saw our camp on a terrace above the stream, more than a thousand feet below us. The slope was covered with grass and Bracken, and so steep that we had to go carefully; at the bottom we were hardly more than 4,000 feet above sea-level, but it was a nice camping ground.

One undeniable advantage of our third camp was that we were not dumped down in the middle of a village; such publicity, even in these days, was not to our liking, being of a kind which brought penalties with no compensating advantages. The nearest village, in fact, was some distance away, and the site of our camp, although open, was more or less private. True, the 'main road' up the valley ran through the estate, but pedestrians were few, and there was no dust. A little cultivation in the neighbourhood brought the agricultural labourer within hail each day, keeping up a liason between our camp and the village. To the east, a fairly high peak, still covered with snow, on the watershed between the Delei and Dou rivers, looked, and in fact was, quite close. The *gam* seemed friendly, if a little bewildered, in so far as anyone as dour as a Mishmi could seem friendly; he produced transport for the next stage more promptly than anyone hitherto, but perhaps that was only because he was anxious to get rid of us. However, we were too low down in the world here to be able to discover much about the alps, and were anxious to press on towards the head of the valley. Nevertheless, although we spent only five days here, we succeeded in ascending to 9,000 feet, eventually reaching a ridge which ran straight up to the main range, and finding several good Rhododendrons. On the other side of the Delei the mountains were lower; being terrifically steep, the walls of the gorge hiding the snowy peaks which lay further back. *F. Kingdon Ward.*

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KURUME AZALEAS.

In the City of Kurume, southern Japan after over one hundred years of selection and hybridisation of Rhododendron obtusum by enthusiastic fanciers, there has arisen a remarkable race of Azaleas renowned for the wonderful colours of their flowers. About the year 1903 these were named the Kurume Azaleas, thus separating them from the type (R. obtusum) whose name in Japan is Kirishima Azalea. Some one-hundred-and-forty years ago Azaleas became very fashionable among the people of the Kurume clan, who went to the woods and mountains of the provinces of Higo and Satsuma, where R. obtusum is naturally abundant, to collect them, but they only wished, at that time, to obtain big and aged shrubs for their gardens or for use as dwarfed shrubs in pots. Some eight or nine varieties were then known. Mount Kirishima, in the latter province, is well-known for R. obtusum, therefore this exquisite Azalea is named after that mountain. The people of the Kurume clan were content with some eight or nine natural varieties, but were not interested in new varieties; but some thirty or so years later, while the Kurume Azalea was the fashion of the clan, people became somewhat tired of their hobby. Grieved at this and desiring to relieve the monotony, a clan retainer endeavoured to create new varieties. His name was Motozo Sakamoto, and he is regarded as the originator of what we now know as the Kurume race of Azaleas. He collected seeds in the temple grounds of Bairinji and Takarayama and elsewhere, but failed to germinate them for several years. Successive failures did not discourage him, but one day, so it is said, the wind blew away the seeds as he was about to sow them. This disheartened him, and he was giving up his ambition when he discovered that the seeds which had been blown away were germinating on the moss. That "inventions often owe their origin to accidents" is true, and Nature teaches us to follow her. Afterwards, he was successful and obtained as seedlings, many new varieties which excelled in colour and form. Many years passed, and he gave plants to Messrs. Yojiemon Nishio, Richu Kasai, Ichizo Yamada, En Takei, Kunie Miura and Kamejuro Imoo. Mr. Nishio, a magistrate of the Kurume clan, originated a variety called Narumi Kasane and it was one of the favourite varieties of Sakamoto. The celebrated varieties Sin Seikai, Suetsumuhana and Yasunishi Takamakie, were raised as seedlings in the garden of Mohachiro Yasunishi. His skill and cleverness greatly advanced methods of culture and the creation of new varieties. These specialists held an exhibition of new varieties each year and competed with each other in culture and variety mutually. The varieties they originated exceeded two hundred, but they agreed not to give any away, and so none was distributed until the Meiji Era. It may be of interest to English readers to know that in a list published by them, a variety named Igirisu (=England) is mentioned. Motozo Sakamoto died on May 18, 1854, at the age of seventy. Three old Azaleas, Azumakagami, Asahi, and Miyakobeni, which Sakamoto cultivated and trimmed, are still in the garden of Mr. K. Akashi, who regards them as treasures.

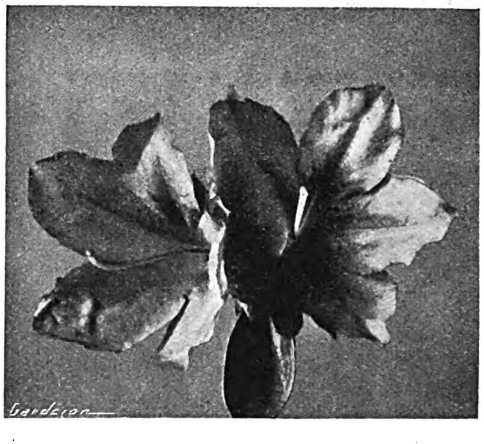

FIG. 121.—KURUME AZALEA NIKKO.

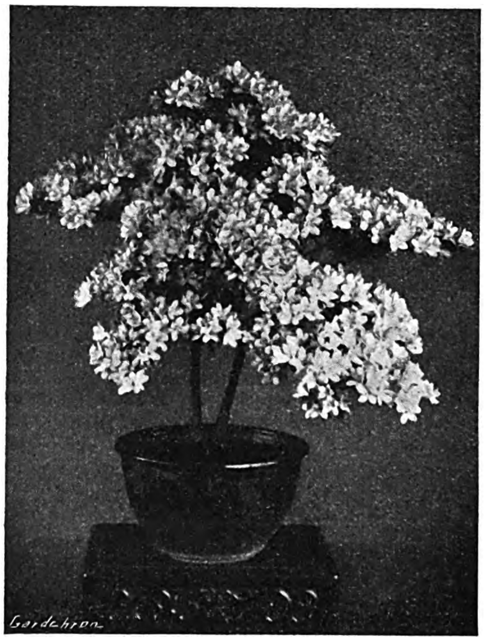

FIG. 122.—KURUME AZALEA YOSHINOYAMA.
A Plant thirty years old.

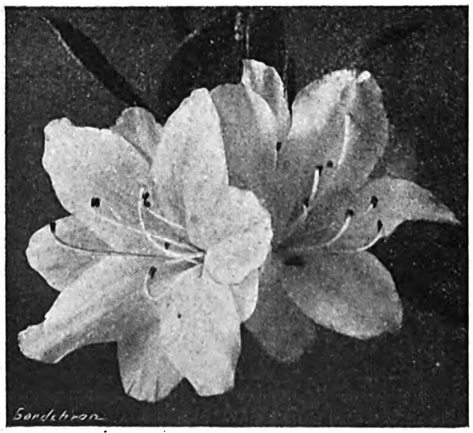

FIG. 123.—KURUME AZALEA KARIGOROMO.

The Kurume Azaleas became fashionable again in the year 1891, and so continue to this day. Many new named varieties are offered each year in the nurserymen's catalogues. Messrs. Akashi-Korakuen, Kurume city, are among the largest raisers and growers; during the past twenty years this firm has raised many meritorious varieties by crossing. In May, 1918, when the Azaleas were in full bloom, Mr. E. H. Wilson visited Messrs. Akashi-Korakuen and, later, he published a splendid work on Azaleas (*A Monograph of Azaleas*), Messrs. Kuwano-Yoseien, Kurume city, are also large growers of these plants, and the Yokohama Nursery Co., Tokyo, cultivates Kurume Azaleas extensively.

The flowers of the Kurume Azaleas are divided into eight types:—

1. Choko (a Japanese wine cup) type.—The petals are broad and open, with roundish apex. Model flower:—Kayoi-Komachi (Fig. 126, p. 247), reddish-pink, striped with reddish crimson, white throat, semi-double, large; Kokonoe, soft purple with white throat, semi-double; Shakukyo, bright crimson, single. The majority of the single-flowered Choko type are scarcely ornamental.

2. Swoad type.—Petals narrow, with pointed apex. Model flower:—Kamo (Fig. 127, p. 247), creamy-white, with purple apex, turning with age to pure white, with a purple apex; semi-double, raised in 1929; parentage, Irohayama × Benzaiten; Kamo is regarded as one of the finest of this group.

3. Common type.—Model flower: Shiga (Fig. 128, p. 247), purple, eye white, striped with dark purple; single; very large and one of the best; parentage, Irohayama × Daikun; raised in 1927. Mikaerizakura, pink, with white throat, single, is very popular; Takasago, pink, semi-double, is the best pink sort.

4. Minokake type.—The outer petals are smaller and curled. Model flower:—Mikushi-shibori, white, striped with reddish-crimson.

5. Ipponjin type.—The stames are imperfect and adhere to the throat, while the pistil is perfect. Model flower:—Nikko (Fig. 121), bright crimson with white pistil, single, fine; Fukashigi, reddish-crimson with white throat, single. Although the flowers of this type are not so fine and large as in other groups, they are much appreciated by Japanese fanciers.

6. Double-flowering type.—Mixed semi-double and double flowers on one plant. Model flower:—Hakuo-Nishiki, creamy-white, striped with reddish-crimson; very large.

About three hundred varieties are offered. The model flowers above mentioned are all the best and most popular varieties, but the following are also popular:—Irohayama, light purple, single; Kurai-no-Himo, salmon, large, semi-double; Suetsumuhana, bright crimson, the best of single crimson sorts; Tokonatsu, white, striped with reddish-purple, large single; Kure-no-Yuki, the best semi-double white; Kirin, reddish-crimson with dark crimson throat, semi-double; Imashojo, the best of semi-double, bright crimson sorts; Azumakagami, pink, very large, semi-double; Ouchi-Yama, dark lilac-purple, semi-double, the best of its colour; Susogo-no-Ito, dark purple, single, the best purple; Wakaba, red, slightly tinted with cinnabar, single, one of the largest flowers; Karigoromo (Fig. 123) is one of the best of recent introductions, being snowy-white, striped with bright crimson; very large (Yoshinoyama × Daikuni).

Many of the best varieties of recent years have been raised by Messrs. Akashi-Korakuen, and the popularity of the Kurume Azalea is, indeed, largely due to their work, and their nurseries (Figs. 124 and 125) are worth going a long distance to see.

They have originated another fine race of

Azaleas named the Kurumesatsuki Azalea, the result of crossing the Kurume Azalea with varieties of Azalea indica (the Satsuki Azalea). Although only ten years have passed since Messrs. Akashi-Korakuen commenced the work of creating this new race, they already have about fifty varieties, of which the following are some of the best:—Nissho, reddish-crimson, white throat, single Swoad type; Matsukaze (Fig. 129), purplish-crimson, with white throat, single; Kiju, clear peach-colour, slightly tinted with purple, white throat, very large, single; Gekkeikan, pure white, striped with pinkish-purple, single; and Hinomaru, bright crimson, large, single. The flower buds of this race are not affected by late frosts as are those of Azalea indica, one of the parents. The Kurumesatsuki Azalea flowers in May, commencing at the beginning of the month.

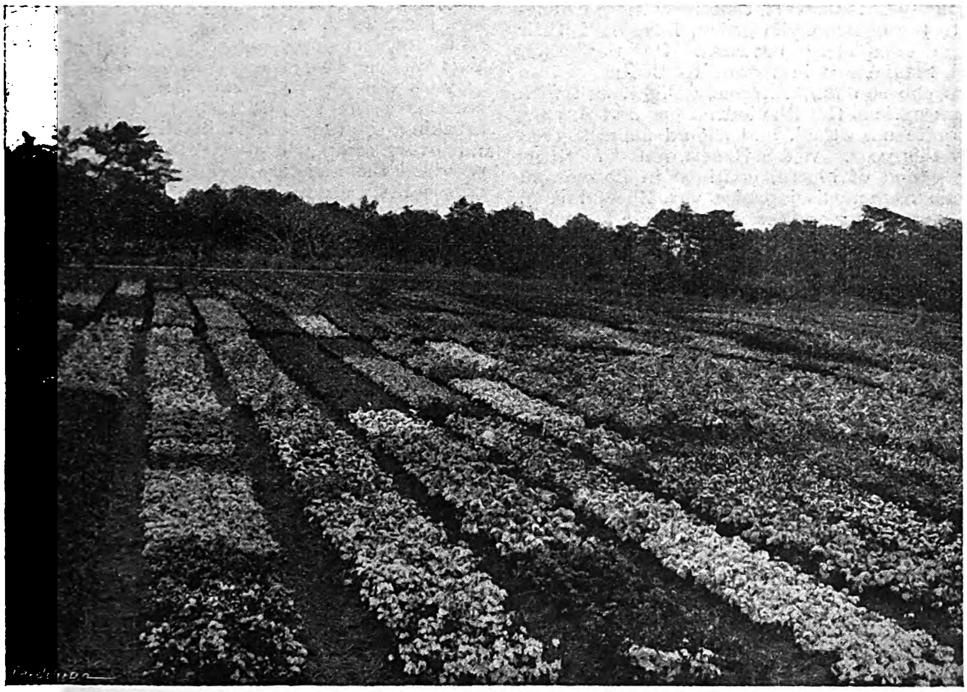

FIG. 124.—KURUME AZALEA NURSERY OF MESSRS. AKASHI-KORAKUEN AT OGRI, JAPAN.

Porous, well-drained, loamy soil is most suited to Kurume Azaleas, and the compost used is a mixture of five parts loam, one part leaf-mould and four parts sand. Planting takes place from October to May, but the best time is just after the plants have finished flowering, while November to March is a good time for exporting. During the growing season Azaleas need a fair amount of water and syringing in the evenings, and they should be shaded from strong sun to maintain the flowers and the foliage in good health. The late frosts often affect the petals. Immediately after they are potted Bean-cake is scattered among them; once a month an application of Bean-cake is given until November; manuring in spring often damages the flowers. After the flowering is over, the plants are cut back, thinned and trimmed so as to secure plants of good shape; in response to this care, they produce a mass of wonderful brilliant colour each year. The specimen (Yoshinoyama variety) in the pan (Fig. 122) is thirty years old, and shows the dwarfness and floriferousness of the Kurume Azalea. The umbrella-trimmed specimens (Fig. 125) are most popular, and these are only formed and maintained by long years of skilful management.

The Kurume Azaleas are useful alike for planting in the shrubbery border or for edging borders, as they are dwarf and bushy in habit. They are also useful for carpeting among other kinds of flowers, giving bright colour in spring, pleasing green summer foliage, and rich autumn tints. These Azaleas force well in the greenhouse.

Cuttings should be struck (after immersion in water from one to four hours) in June or July, when the new shoots are somewhat hardened and it is the rainy season in Japan; they are placed in the outdoor propagating bed, and are made from two to three inches long; in one year they become four to twelve inches long. They must be watered carefully and shaded until they form roots. If propagated under glass, the cuttings are usually inserted in pure sand, and form roots in two weeks or so; some growers use Sphagnum-moss. If a box or pan is used it should be half-filled with crocks and charcoal, which should be covered with pure sand. After inserting the cuttings, they should be watered in well and syringed twice or thrice a day.

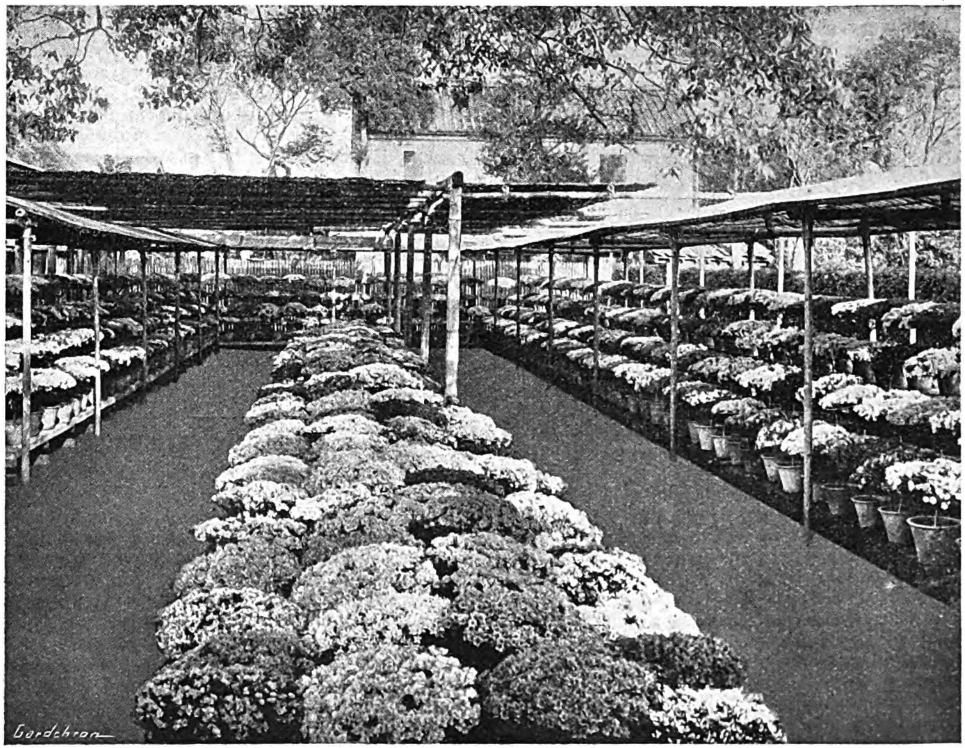

FIG. 125.—KURUME AZALEAS IN KURUME CITY, JAPAN.

Grafting is employed for the purpose of quickly multiplying new varieties. Yodogawa, the most vigorous and rapid-growing variety, is used as the stock. In the sowing of the seeds and the treatment of seedlings the methods practised are as for Rhododendrons and other Azaleas.

I consider the Kurume Azalea is one of the finest of Japanese introductions, and I admire the splendid work of originating and improving this beautiful race of plants. *K. Yashiroda, Tonosho-Kyoku, Kagawaken, Japan.*

NOTES FROM A WELSH GARDEN.

Although it is too soon to estimate the full loss sustained by the recent frosts, it is only too painfully obvious that the day of reckoning will be a melancholy one. When there are 22° of frost registered on a sheltered wall there is very little hope for anything in the open not absolutely hardy, and even here we had weather of somewhere about that severity for at least a fortnight. Fortunately for the smaller things, this frost was preceded by a fall of dry, powdery snow which gave them some protection.

Most of the New Zealand shrubs were killed outright, old specimens of Leptospermum having their bark split on branch as well as stem. Very few Veronicas and Cistuses are left, all shrubby Senecios and most Olearias are beyond repair, and even such reliable things as Helianthemums will practically all have to be replaced. It is doubtful if Eucryphia cordifolia and Tricuspidaria lanceolata will recover, and I am no more hopeful of Berberidopsis corallina, a long-established plant on a sheltered wall. A few curious incidents may be noted. Erica arborea was destroyed, but E. australis close by was only partly injured. Convolvulus Cneorum, quite in the open, is unharmed, yet Daboecia polifolia is all cut to the ground level. Mutisia decurrens is apparently untouched, notwithstanding its fresh, sappy tips. Yet there are patches of Calluna vulgaris so brown that they look as if they had been scorched by fire. Ceanothus rigidus, usually regarded as tender, is unharmed, but C. Veitchii and C. papillosus are beyond hope. But why continue the sorry tale? Most of us are in the same boat, and a cargo of adversity is a cheerless freight.

Moreover, there are some compensations to record. The covering of snow and subsequent period of rainless weather and unbroken sunshine have been ideal for the early Saxifrages. S. Griesbachii, S. Bursiculata, the dainty S. kewensis, S. Boydii and the rest of their charming class, are exceedingly happy. Had these been in an alpine house they could hardly have looked brighter and better. Some of the early Drabas are also enjoying conditions which are associated with the southern Alps at this season, and the pale yellow of these, with the first of the miniature Narcissi (notably N. minor var. minimus) unite with the intense blue of the Muscaris, Chionodoxas and other early bulbs in a pleasant reminder that spring is already well on the way in the rock garden.

The Snowdrops in the woodland, which, by the way, are spreading abundantly by means of seeds, in a ground-covering of Ivy about eight inches thick, were joined by the first of the Daffodils before the middle of March, despite the continuance of frosty nights. Then followed the Erythroniums of the Dens-canis section, and I know of nothing more delightful than these beneath the leafless trees. Every season more are planted yet one never has enough of their elfin grace and soft colouring, and before the last are over others of the genus will have come to carry on their season until well into May. Corydalis cava is also a faithful woodlander with a pleasing fragrance, rare in its race, the white form being especially attractive among the Ferns of its shady retreat. A selected form of Pulmonaria azurea, exceeding Mawson's both in the size and blueness of its flowers, makes a welcome patch of colour upon the frost-bitten herbage of the woodland. P. arvernensis var. Mrs. Moon stands out distinctly from others of the spotted kinds, both in earliness and the much larger blooms which are a pale shrimpy-pink when full. But in Pulmonarias other than blue there is none, I think, to approach P. rubra, which I alluded to last month (p. 142). It is odd that Farrer (*The English Rock Garden*) should have regarded this species as a form of P. arvernensis, and one can only surmise that he did not possess the true plant.

Rhododendron praecox, retarded until now; has opened some of its lovely blossoms, but even in their very sheltered position the chances of their escaping frost are rather remote. On the other hand, that delightful little shrub, Erica carnea var. Vivellii, is a mass of rich cherry-rose. It is a little paler in tint, perhaps, than usual, as are all winter-flowering Heaths, probably owing to the absence of rain, but its fine colour and extreme hardiness are particularly gratifying just now.

One is glad of the Primroses when even Aubrietias look like bunches of hay, and both the singles and doubles are already making quite a good show. Among these the big yellow blooms of Evelyn Arkwright will not be passed unobserved, while in the numerous P. Juliae clan I do not think there is one so appealing in its diminutive neatness and depth of colour as Pam. P. Winteri will be in flower before these notes are in print. Lovely as that species undoubtedly is, one cannot allow these choice and fastidious things entirely to queer the pitch of such reliable old friends as P. denticulata. The almost spherical flower-heads of the latter are a delightful colour, they are no trouble to produce, for the plant will prosper under almost any conditions, and in a season such as this the weather-proof qualities of P. denticulata, its uncomplaining adaptability and cheerful blooms, remind us of our indebtedness to such familiar, well-tried plants as this. But to get the best out of P. denticulata it must be given rather lean treatment or its charm will be lost in coarseness of leaf and flower.

The warm sun of the last few weeks, and a day temperature which has touched 69° on several occasions, has been just the thing for Iris unguicularis. Notwithstanding the fact that its foliage was browned by the frost, this lovely Algerian species is flowering gaily in a mixed border. Like many other plants, the fragrance of this Iris varies with the season, or the conditions, but it never seems so deliciously scented as it is under more southern suns. *A. T. Johnson, Ro Wen, Conway, North Wales.*

NOTES FROM WISLEY.

As a result of the great frost, numbers of plants in the gardens at Wisley are looking very sorry for themselves. Shrubs, such as the Ceanothuses, have naturally been severely cut, and many Cotoneasters, especially those belonging to the glaucophylla group, have had their foliage completely browned. On the other hand, the damage in regard to Cistuses is, so far as one can tell, extremely slight, and with few exceptions the Rhododendrons and Azaleas are quite unscathed, and should make a good show this year. Witch Hazels, noted for their long period of bloom, continue in flower and include Hamamelis japonica var. Zuccariniana, H. j. var. arborea and the earliest of all, H. mollis. Other deciduous shrubs are now showing bloom as, for example, the common Hazel, Cornus Mas, with its yellow blossoms, and Parrotia persica, whose brown, cupped flowers betray a gleam of scarlet.

Flowers are also to be seen in the borders around the laboratory, where some monster varieties of cultivated Snowdrops are in bloom. Most of these are very clumsy in comparison with the wild type. More pleasing are the flowers of Iris unguicularis, of which there is a very dark-flowered variety known as angustifolia. Its colouring approximates to that of Iris reticulata, which is in bloom in the same border.

The alpine house, during sunny periods, attracts numbers of hive bees which work among the flowers of Saxifraga Burseriana and its many varieties, of which those that have recently commenced to bloom are S. Burseriana var. Gloria, with very large flowers, and S. B. var. sulphurea, with pale yellow blossoms. Other Saxifrages in bloom include S. Riverslea, a fine S. Engleri hybrid with pinkish flowers borne on crimson, hairy pedicels, and S. lilacina, which is now a mass of pale mauve blossoms.

A pretty little Iris in bloom in the alpine house is I. Cantab, with pale, smoky-blue flowers which give forth a pleasant fragrance.

Now that the severe frost is past, the Crocus species in frames are beginning to flower abundantly, and when the sun is out are extremely attractive. Some of those with broad perianth segments resemble miniature Water Lilies when fully expanded, none more so than the very handsome white form of C. Imperati.

The rock garden plant life is beginning to move at last, and on the banks of one of the top rock pools is a little colony of Adonis Nadorkaki: the bright yellow flowers with their feathered margins are particularly striking. Plants of Primula Winteri, the flowering of which was interrupted by the cold spell, are now resuming their duties and seem likely to provide a show of bloom which will last well into the spring. *J. E. Grant White.*

BOG AND WATER GARDEN.

PRIMULA ROSEA.

If one were making out a list of the best half-dozen Primulas for the average garden, it would be hard to exclude P. rosea. Many of us are getting rather tired of the troubles inflicted upon us by a number of the newer kinds, and even some of the older ones which ought to do almost anywhere and prove perennial, are apt to need constant renewal. It is therefore with unqualified admiration, begotten of long and unfailing satisfaction, that one is still able to regard P. rosea as a species of the foremost rank. Botanists tell us that it ought to be called something else, since its name covers a number of Himalayan Primulas. But I rather think that the plant most of us know as P. rosea will always be recognised in gardens by that name. Although a lover of wet places, delighting in boggy soil, and even growing in shallow water, P. rosea is so adaptable that it will prosper in any moist border or even a cool corner of the rock garden. It makes a clump of rather small, glossy, pale-green leaves which die back entirely in early autumn. In spring, long before most bog-plants are beginning to move, the plants become studded with vivid carmine buds. These expand as the flowering stalks rise, and by the time the latter have attained their full height of three or four inches, each is bearing an ample head of large blossoms in a lovely shade of carmine-rose with a yellow eye. This typical form is delightful enough, but there is a taller one, listed as P. r. var. grandiflora, which has still larger blossoms and an eight-inch stalk. This is always worth a place, and it is quite as easy as the type. P. rosea is such a willing, amiable plant that it may be increased by breaking up the clumps in the late summer and every scrap will grow. It enjoys full sun, provided the moisture supply is ample, otherwise a little shade is desirable.

CARDAMINES.

If the double-flowered Lady's Smock (Cardamine pratensis) is by a long way the best of its tribe, I must confess to a liking for the lush-leaved C. macrophylla. In the right place, among other robust growers about the margins of pool or stream, the fresh green foliage and bright purple flower heads of this plant are very attractive. It is, moreover, early flowering, giving colour in masses long before most waterside subjects have made any headway. As for C. pratensis fl. pl., its fine Stock-like trusses of bloom in a fresh lilac are well enough known and appreciated. This plant, however, can be a cause of much trouble in moist soil. In the rock garden or borders it is all that is delightful, but if it has an opportunity of establishing itself in or near the bog it may easily become a pest. Farrer refers to it as being "generous with self-sown seedlings which come true to their parent." Here he was surely in error, for while I have never seen a seed on this double Cardamine, there is evidence in plenty of its ability to increase itself by vegetative means, many a wind-blown scrap of leaf or stalk striking root in moist soil. However, I am inclined to think that collected native double-flowered forms are much more prolific in that method of reproduction than the plant commonly seen in rock gardens. I was once indiscreet enough to bring home a tier-on-tier form found in a moorland ditch, and have abandoned all hope of ever seeing the end of its multitudinous leaf-born offspring. There is, or was, a pure white variety of the double Lady's Smock, a useful plant, but unheard of now.

C. trifolia is a pretty woodland species from Switzerland and south Europe. In a cool, good soil it will make a dense mat of dull green, leathery, Trefoil leaves. Above these, on three-inch stems, the snow-white flowers appear in early spring. But C. trifolia misses being a front rank plant.

RODGERSIA TABULARIS.

If I were ever to be restricted to the growing of one Rodgersia, the subject of this note would be my choice. This, not only because it is the most distinctive of the various kinds in cultivation, but because, while it has larger leaves than any other, it is a plant that will do with comparatively little space. Most of the Rodgersias are too vigorous for the average amateur's garden, but R. tabularis will take a good many years in covering a square yard, and then it will confine itself to a self-contained clump. That, at any rate, is how I have found it after having had it in good moist soil near water for a sufficient time to enable it to be compared with others.

R. tabularis commences growth in spring, early enough very often to suffer from frost. But if the uprising leaves do get nipped they will be replaced later by a fresh crop. These leaves are peltate, round as a plate, and held erect on stalks about two feet long. They are about eighteen inches across, their drooping margins are slightly scalloped and their pale, downy green has that softness of tint which harmonises so sympathetically with their limp and delicate texture. The erect flowering stems rise to a height of three or four feet, so that they stand well above the leafage. These bear in summer waving plumes of milky-white blossoms. A second crop of bloom in autumn is not an infrequent occurrence. *J.*

HARDY FLOWER BORDER.

KNIPHOFIAS.

The genus Kniphofia is an extensive one comprising some fifty species, mostly natives of South Africa, and few races of plants produce such a striking and brilliant effect in the late summer and autumn as these handsome border perennials, commonly known as Red-hot Pokers, Torch Lilies or Flame Flowers. They grow well in a deep, loamy soil, which is well-drained, and although lovers of moisture, anything approaching stagnation is inimical to their well-being, and a frequent cause of losses in winter. Once established in a good soil, they require little further attention beyond an occasional top-dressing of decayed manure, and, besides being useful in the border, they are of great value for grouping at the front of shrubberies or in the open woodland, while, when planted in large masses near water, they are highly effective, particularly from a distance. Like many other fleshy-rooted subjects, they resent disturbance, and when replanting becomes necessary it should be done in the spring just before new growth takes place, when the plants may be increased by division. Seeds are produced freely in favourable seasons and afford a further means of propagation.

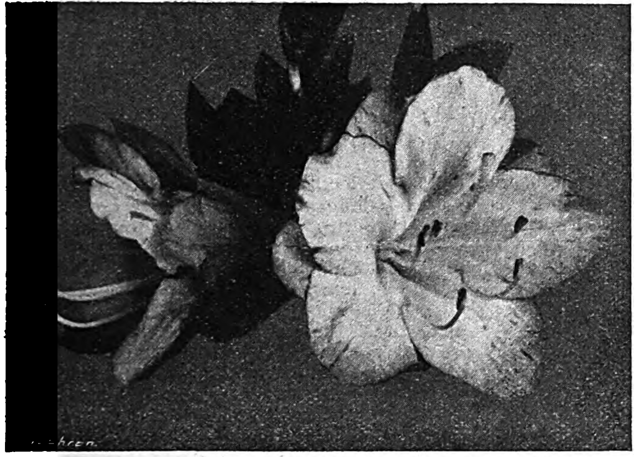

FIG. 126.—KURUME AZALEA KAYOI-KOMACHI.
(see p. 244).

In addition to the numerous species, there are large numbers of hybrids which have been raised in recent years, many of them being plants of exceptional merit, producing magnificent, long flower spikes of wonderful brilliance. K. Uvaria is probably the oldest species in cultivation; it is an excellent border plant, and has given rise to many handsome forms, one of the finest of which is the variety nobilis, a handsome plant, sometimes raising its thick stems to a height of six or seven feet, surmounted by long heads of flowers which vary in colour from flaming scarlet to rich orange-red. K. caulescens is another old and well-known species with broad, glaucous leaves, and large, dense spikes of scarlet and yellow flowers. K. Macowanii is a distinct species with grassy foliage. It is one of the best of the dwarfer kinds, bearing erect spikes of richly-tinted, orange-scarlet flowers with remarkable freedom. K. corallina, stated to be a hybrid between K. Uvaria and K. Macowanii, is also a good dwarf kind, with brilliant scarlet flowers shading to orange. K. Tuckii is of comparatively recent introduction, and is earlier-flowering than many others, its spikes appearing so early as June, the flowers being red at first, changing to sulphur-yellow later. The plant is of distinctly tufted habit, and the leaves are somewhat stiff and tapering.

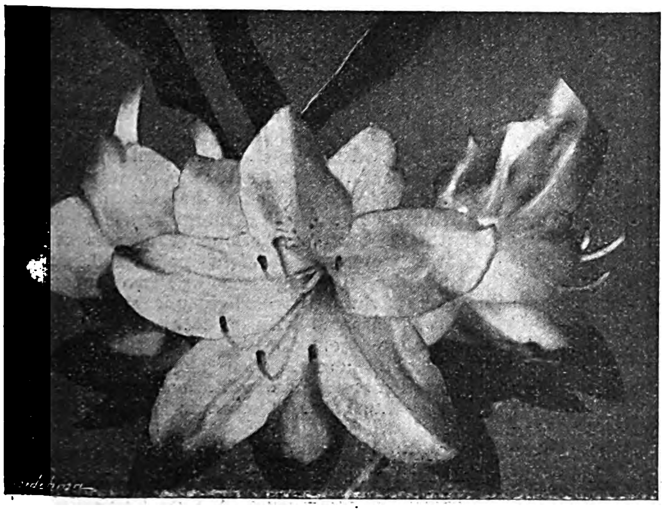

FIG. 127.—KURUME AZALEA KAMO.
(see p. 244).

Among hybrid Kniphofias of merit may be mentioned Jno. Benary, with large spikes of rich orange-scarlet flowers; Meteor, a tall-growing plant with coral-red flowers shading to orange; Triumph, with deep bronzy-yellow spikes, and Etna, with magnificent long spikes of rich scarlet, shading to orange. *W.A.*

MODERN HYBRID ASTILBES.

There was a time—remembered by most of us—when Astilbes were almost unknown as garden plants. We grew a few white-flowered species by the waterside, and then there were those old, rosy-pink hybrids Peach Blossom and Queen Alexandra, often called Spiraea japonica and familiar as decorative subjects in pots. But one day there came from China a splendid stranger, Astilbe Davidii, with towering bloom spires in a gorgeous, almost barbaric, blend of violet and crimson. The introduction of this sumptuous Oriental marked an epoch in the outdoor culture of Astilbes, for it is mainly to A. Davidii that we are indebted for those superb varieties which are so striking a feature of our best modern gardens to-day.

By crossing A. Davidii with the old A. japonica and others, a race of hybrids was produced which, while its members surpassed their parents in stature and elegance, gave a wide variety of tasteful colours. Subsequent selection and re-crossing being continued, a still further advance was made, with the result that we now have a range of Astilbes such as was undreamed of twenty years ago. Varying in height from two feet to six or even seven feet, these magnificent plants bear foamy inflorescences which are exquisitely feathered, light as air, and often half as long as the height of the entire growths. As for the colours of these delicate plumes, which are, by the way, singularly immune to the effects of rough weather, they vary from white to cream and ivory, from pale pink to deep rose, and there are some delightful salmon and flesh tints as well, with others in rich tones of violet, purple, crimson and amaranth.

Whether these hybrid Astilbes are grouped by the waterside or in the herbaceous border they will, under generous treatment, produce such copious sheaves of blossom that they easily hold their own in the most aristocratic company. And this they will do from July to late September when so many flowering plants are on the wane. In the majority of them the tints are so refined and delicate, and in all of them the flowers and foliage so extremely light and graceful, that some consider these plants should always be grown in groups of their own kind. But this is very much a matter of taste and expediency. They are seldom out of place, and it will be welcome news to some readers perhaps to learn that such admirable plants as these have proved exceptionally good subjects for town gardens.

The hybrid Astilbes enjoy the advantage of being very easily grown. They are practically all hardy, pest-proof and robust. All they ask is a fairly damp, rich soil with, if possible, a little shade from the hottest sun. But by the water they may always have full exposure. Being thirsty creatures they need plenty of moisture, especially during the earlier summer and when coming into flower, and the winter top-dressing of half-decayed manure or rotted vegetable matter can hardly be too liberal. Planting may be done in autumn or early spring, and propagation is a simple matter, for old clumps may be divided at any time during the dormant season, and every rooted scrap will grow. The only places in which Astilbes are likely to fail are dry, sandy soils and those in which chalk prevails.

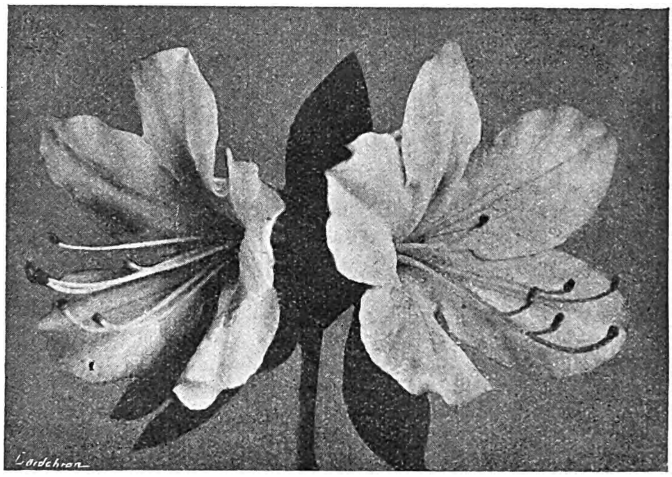

FIG. 128.—KURUME AZALEA SHIGA.
(see p. 244).

There are now so many of these Astilbes from which one may make a choice, and such a high level of excellence exists among them, that it is difficult to suggest a small selection. But among the taller growers I recommend Professor V. D. Wielen, a superb variety with wine-red stems and enormous pyramidal inflorescences of snow-white; King Albert, with very large, creamy-white plumes, and the deep red Salland. In those of about half the above stature, the rich crimson, Granat; the amaranth-crimson, Amethyst, and Gloria in an intensely vivid ruby-rose, are, perhaps, the best of their respective colours. Then, in the more tender shades, the grower's choice might be decided by Pink Pearl, one of the oldest but still to the fore; Salmin Queen, which is a lovely, warm rose; Siegfried, a pale silver-pink; the soft flesh-pink Ceres, and Astarte, a very dainty lilac. These, with White Gloria, as a pure white of about medium size, would make a very representative collection of these singularly charming plants. But any good nursery list will tempt the reader with dozens of other, and none of them are expensive. *A. T. Johnson.*

MIMULUS BARTONIANUS.

Fully expecting to find this plant injured, if not destroyed, by the recent frosts, I was surprised to see several of the oldest clumps already breaking into growth before the middle of March. These have had no protection whatsoever, and they are growing in a cold soil with clay near the surface.

This Mimulus is a hybrid between M. cardinalis and M. Lewisii and, writing from memory, I believe it was raised in Scotland a few years ago. It is not only hardier than either of its parents, but a more vigorous grower, a well-established plant making a bold mass three or four feet across and two feet tall. The grey-green leaves are viscous and the large flowers, which are a rosy-red with a yellow throat, are yielded in amazing prolificacy from the later spring to autumn. M. Bartonianus is, indeed, the first to flower here, and the last to go over. It is more slug-proof than most of its kind, especially when doing well, and the only attention my plants get is an annual top-dressing of decayed vegetable refuse applied in early spring. Propagation can be carried out by cuttings, but division is less trouble, and old clumps are none the worse for breaking up. A variety known as Sunset, which was raised recently by Messrs. Smith, of Daisy Hill, is a decided acquisition, the colour of the flowers being orange-scarlet. This very striking plant has so far proved to be as hardy as its parent. *J.*

THE GENUS PRIMULA.

(Continued from p. 230.)

MAGELLANICA (Lehm.). Magellan P.
(Farinosae.)

THIS plant is considered by most botanists to be a sub-species of P. farinosa. It is a robust, strong-growing plant with a large rosette of diamond-shaped-elliptic leaves, one inch to four inches long; margins coarsely toothed; upper surface usually smooth, underside mealy. Flower stem six inches to twenty-four inches tall, stout, bearing an umbel or rounded head of shortly-stalked, rose-lavender or white blossoms. Corolla similar to that of P. farinosa.

Grows in damp, exposed places, usually in elevated situations in southern Chile, Terra de Fuego, and the Falkland Islands.

Culture: As for P. farinosa; it is an easily grown plant.

MALACOIDES (Franch.). Fairy P.
(Malacoides.)

The type of this popular species produces a tuft of thin leaves with broadly oval blades two-and-a-half to three-and-a-half inches long and one-and-a-half inch to two-and-a-half inches wide, borne on rather slender stalks four to seven inches long; margins divided into from six to eight broad lobes furnished with pointed teeth; upper surface more or less smooth, underside covered with white hairs which secrete a little white meal at times. Flower stem six to twelve inches tall, bearing two to six superposed, many-flowered umbels of rose-coloured, or rarely white blossoms on slender stalks. Corolla slightly concave, half-an-inch across, divided into five broadly heart-shaped lobes; tube slender, cylindric, slightly longer than the calyx. There are two forms of this species in cultivation, one with small leaves and slender, graceful inflorescences, and the other a much coarser plant; there is also a double form. Introduced in 1908. (*Gard. Chron.*, 1923, Vol. LXXIII, Fig. 92, p. 203).

Grows in shady places in mountainous situations near Tali, in Yunnan, western China.

Culture: This plant is not particular as to soil, but to be retained as a perennial, the soil must be well-drained in winter; it will withstand as much as 14° of frost under suitable conditions.

MALLOPHYLLA (Balf. f.). Large Mallow-leaved P.
(Candelabra.)

A rather handsome, smooth, non-mealy, deciduous perennial species with a tuft of rather thin leaves five to seven inches long, with oblong or oblong-egg-shaped blades, rounded at the tip and tapering below into a short, winged stalk, dilated at the base, with the midrib of a bright red colour; margins sharply toothed as though gnawed by insects. Flower stem about twelve inches tall, robust, slightly downy upwards, bearing two to three superposed umbels of ten to twenty lilac blooms. Corolla about three-quarters-of-an-inch across, divided into five retuse, notched, egg-shaped lobes, with torn margins and a tooth in the sinus; tube membranous, about five-eighths-of-an-inch long, with a ring in the mouth.

This species is found in the district of Tchenkeowtin, in eastern Szechuan, central China.

Culture: As for P. japonica.

MALVACEA (Franch.). Mallow-leaved P.
(Malvacea.)

A handsome species with richly tinted blossoms. The leaves are produced in a loose tuft and have rounded, broadly oval blades two to three inches long, heart-shaped at the base, borne on downy stalks three to four inches long; margins furnished with coarse, blunt teeth or small lobes; both surfaces covered with short, fine down. Flower stem three to ten inches tall, stout, downy, bearing two to four superposed umbels of two to six rosy-red blossoms on stalks about half-an-inch long. Corolla about three-quarters-of-an-inch across; lobes broadly oval, bilobed; tube as long as the calyx, cylindrical, with a distinct ring in the mouth. Flowers in July and August. Introduced in 1908. (Illust. in *Jour. Roy. Hort. Soc.*, Vol. XXXIX, 1913).

Grows in open mountain pastures, usually on limestone formations, in north-western Yunnan at 10,000 to 11,000 feet above sea level.

Var. alba (Forrest), has white blossoms with a yellowish eye; it inhabits open alpine pastures in western Yunnan.

Culture: Good fibrous loam, leaf-soil and limestone chips in a cool, half-shady spot, should suit it.

MARGINATA (Curtis). Margined P.
(Auricula-Brevibracteata.)

A beautiful perennial species with a woody rootstock frequently reaching a foot in length, clothed with the dried remains of the previous seasons' foliage and usually more or less mealy. The smooth, greyish-green, leathery leaves, in tufts, have oblong or egg-shaped, blunt blades, margined with a conspicuous narrow edging of whitish meal and deeply and regularly toothed; they taper to a short stalk and measure in all one inch to four inches in length. Flower stem rather stout, one-and-a-half inch to five inches long, mealy, bearing an umbel of two to twenty lilac or bluish-lilac blossoms on stalks three-quarters- to one-and-a-quarter-inch long, coated with meal. Corolla broadly funnel-shaped, rarely flat, three-quarters to one-and-a-quarter-inch across; lobes rounded, cleft; tube cylindrical below, dilated upwards, many times longer than the calyx. Flowers in July and August. Introduced in 1777. (*Bot. Mag.*, t. 191).

Grows in crevices in limestone or granite rocks in sun and shade in the Graian, Cottian and Maritime Alps.

Culture: It may be grown in a level part of the rock garden in loam and limestone chips, but is best in a cleft of a limestone rock, in a cool, shady spot.

MAXIMOWICZII (Regel). Maximowicz's P.
(Nivales.)

A handsome, robust perennial species with a tuft of smooth, non-mealy, distinctly stalked or almost stalkless leaves from two to three inches long, with narrowly-elliptic or elliptic-oblong blades, pointed at the tip, margined with numerous fine teeth, or nearly entire. Flower stem seven to fourteen inches tall, smooth, non-mealy, stout, bearing from one to three superposed, drooping umbels of clear, dark purple blossoms on thread-like stalks three-eighths- to three-quarters-of-an-inch in length. Corolla about five-eighths-of-an-inch across, divided into five narrow, oblong, reflexed, entire lobes; tube cylindrical, twice as long as the calyx. Introduced in 1911. (*Gard. Chron.*, 1910, Vol. XLVII, Fig. 96, p. 221; *Bot. Mag.*, t. 8363).

Grows in damp mountainous situations in Shensi and Kansu, in northern central China, up to 9,000 feet above sea-level.

Var. brevifolia (Pax.), has nearly stalkless, almost entire, oval or oval-oblong leaves; flower stem four to seven inches tall. Shensi and Kansu.

Var. Dielsiana (Pax.), has distinctly stalked leaves, with toothed margins; flower stem seven to fourteen inches tall. Shensi.

Var. euprepes (W. W. Sm.), has spathulate-lance-shaped leaves; flowers vinous-purple or chocolate coloured. South-eastern Tibet.

Culture: Good, somewhat heavy loam, in a damp, open spot, is indicated.

MEGASEAEFOLIA (Boiss.). Megasea-leaved P.
(Megaseaefolia).

A robust, perennial species with a tuft of rounded or oval-rotund, papery leaves, four to six inches long and three to four inches wide, blunt at the tip, heart-shaped or rounded at the base, borne on a narrowly winged stalk about equalling the blade in length; margins furnished with small, sharp teeth; upper surface smooth, underside clothed with rust-coloured down on the nerves. Flower stem slender, more or less smooth, four to five inches tall, bearing one to two superposed umbels of many nodding, rose-coloured blossoms on stalks about three-quarters-of-an-inch long. Corolla about one inch across, divided into five heart-shaped, deeply notched lobes; tube about three-quarters-of-an-inch long, exceeding the calyx. Flowers in March and April. Introduced in 1896. (*Bot. Mag.*, t. 7901).

Grows in damp, shady places on the mountains of Rhasistan and Lazistan, reaching an elevation of about 1,000 feet above sea-level.

Var. superba is a robust garden form.

Culture: Plant it in good, rich loam and leaf-soil, in a shady spot, and keep well supplied with water when in growth.

MEIANTHA (Balf. f.). Small-flowered Fairy P.
(Malacoides.)

A delicate, annual sub-species of P. Forbesii, with a rosette of hairy leaves from half- to one-and-a-half inch long, with oblong, rather blunt blades about three-quarters-of-an-inch long and half-an-inch wide; margins furnished with sinuate, pointed lobes; both surfaces covered with long, jointed hairs; the blade is wedge-shaped at the base and is contracted into a short, distinct stalk. Flower stems many, up to about four inches tall, slender, hairy at the base, more or less mealy upwards and among the flowers, which are borne in solitary or superposed umbels of about fifteen blossoms. Corolla pink or violet, about three-eighths-of-an-inch across; segments broadly wedge-shaped and irregularly toothed; tube cylindrical, short, yellowish, with an obscure ring in the throat. Flowers from January to April.

Grows in damp, shady places on the Maymyo Plateau in the Shan Hills, Upper Burma, at about 3,500 feet above sea level.

Culture: As for P. Forbesii.

MELANODONTA (W. W. Sm.). Detritus P.
(Candelabra.)

A beautiful deciduous, perennial species closely allied to P. serratifolia, with a tuft of broadly lance-shaped or egg-shaped, membranous leaves from one inch to two inches long, rounded or blunt at the tip and narrowed at the base into a hardly distinct, winged stalk; margins rather coarsely toothed; both surfaces more or less smooth. Flower stem four to eight inches tall, smooth, non-mealy, bearing one or two superposed umbels of three to five, slightly fragrant, sulphur-yellow blossoms with a dark, greenish-yellow or orange eye. Corolla about three-quarters-of-an-inch across, with egg-shaped, slightly notched lobes; tube cylindrical, about twice as long as the calyx. Flowers in May and September.

Grows in short turf on alpine slopes and on the muddy banks of streams at Scinghku, in north-eastern Upper Burma, at 11,000 to 13,000 feet above sea level.

Culture: Good fibrous loam in an open spot, saturated with water when the plant is in growth, is indicated. *A. W. Darnell.*

(To be continued.)

HOME CORRESPONDENCE.

Royal Horticultural Society's Accounts for 1928.—I was much interested in your two articles on the R.H.S.'s Accounts for 1928 (pp. 153, 195). Neither Mr. Musgrave nor I is a chartered accountant, although Mr. Musgrave, with his experience in the Land Registry Office, makes a far better treasurer than I could have ever hoped to become. We were both overshadowed by the Gurney Fowler-Reader-Harper complex. Most of the Fellows of the Society, if they keep any accounts at all, do so in penny note-books with what they spend on one side, and what they receive on the other; and to these simple souls the elaborate accounts of the Society are a little confusing. It is, I suppose, necessary to have a Balance Sheet and also Revenue and Expenditure Accounts, but surely the separate accounts of the various trust funds might be omitted or relegated to an appendix. The most serious disadvantage of the accounts in their present form is the impossibility of obtaining much information out of them. For instance, although we have the figures for the hall lettings, we do not know what is the expenditure which they involve in over-head charges, maintenance and upkeep. Again, in the case of the Summer Show, the accounts show on the credit side the excess of receipts over expenditure, but there is nothing in the accounts to show the cost of Chelsea or the total receipts; the figure of £2,630 in respect of the International Exhibition of Garden Design, I understand, is the net figure, *i.e.*, the cost after the receipts have been deducted from the total expenditure on this exhibition. There is something in the nature of a suggestion in the air that the return the Fellows get from Wisley is hardly commensurate with the expenditure of some £15,000 a year. The high cost of Wisley is due almost entirely to the lines on which the gardens have been developed during the years they have been in the possession of the Society; it must be remembered that Mr. Wilson's original garden occupied the few pockets of good soil and well-drained and sheltered land at Wisley, whereas on much of the land taken into cultivation since then gardening is difficult and consequently expensive. I have no hesitation in saying that Wisley is run on strictly economical lines, and that the Fellows get a good return for their money; probably the majority are not aware of this, as I think they have little idea of the immense amount of work done at Wisley in trials of fruits and vegetables. At the same time, I think the Wisley accounts require elaboration, and should show clearly the cost of the different departments; the department under the Keeper of the Gardens, the department under the Keeper of the Laboratories, the department concerned with the fruit trials in connection with the Board of Agriculture, and the farm. With regard to the Lindley Library, I suggest that the list of books acquired in the course of the year should be issued with the *Book of Arrangements* in the same format as the Library Catalogue. *William Lawrence.*

What Shall we do with our Greenhouses—In your issue of March 9, p. 189, Mr. G. H. Everett has broached a subject under the above heading which has occasioned much hard thinking for both employer and gardener since the Great War. Many owners have been placed unwillingly in the position of choosing between demolition, letting, or marketing their own produce, and many private gardeners nowadays are necessarily expected, through force of circumstances, to provide a good surplus for sale, so as to keep these greenhouses and gardens going, and the maximum output is required with a minimum expenditure. The result is that gardeners have to adapt themselves to these changed conditions. Generally speaking, the glasshouses in most private gardens are what I call "odd lots" from a market point of view; they were erected at a time when little consideration was necessary for minimising expenditure. Houses were dotted about in all directions, together with many stokeholes, this being due to the erections taking place over a number of years under various owners and gardeners, who all appear to have had a different end in view. This now resolves itself into an uneconomic system and a drawback to profitable market work. The many stokeholes mean wasted fuel and labour; possibly there is an inefficient water supply, and the houses are unsuitably constructed for market crops. The gardener of to-day who has to make the most from such poor foundations has no easy task, and results are not always satisfactory, if one omits to fully consider these drawbacks. In deciding what crops to grow, it is worth while to give special forethought to the suitability of the houses for any particular crop; the ability to dispose of produce locally, so as to obviate, so far as possible, railway rates, salesmen's fees, and other incidental expenses of a distant market, and also whether the man in charge has special knowledge and skill in the cultivation of any particular crop or plant. The question of heated or unheated houses must be governed by circumstances, but, except in a few instances, unheated houses will not produce crops equal in quantity or quality to houses where artificial heat is available. I agree with Mr. Everett that cold houses will produce excellent crops of high quality Peaches and Nectarines, and my experience has proved cold houses to be more remunerative than heated ones for these fruits. Very high-class fruits of Pears and Plums may be grown easily in unheated houses, but my experience of these as a market proposition is very disappointing. I also agree with Mr. Everett that border cultivation for Plums and Pears is more satisfactory, but I doubt whether it is the more profitable method of utilising a house for that crop. I am inclined to favour the growing of these fruit trees in pots, and after the fruiting period, plunging the trees in the open until it is necessary to bring them under glass again; the house meanwhile could be used for other purposes, and I contend that the increased returns thereby will outweigh the extra labour involved. Tomatos, Cucumbers and Chrysanthemums are, in my opinion, profitable crops for heated houses, and even in cold houses would give a better return than Grapes, which in these days are realising poor prices to the grower; besides which, the vines have to be grown several years before a full crop can be taken from them, and being more or less of a permanent nature they are too risky a speculation. The position of a private gardener of to-day differs greatly from that of his predecessor twenty years ago. He has not the opportunities to foster and experiment with his ideas. He is generally short-staffed, and his expenditure must be kept at the lowest, and he must be continually devising means for economising labour and general expenditure, but must, at the same time, not lower the income. These changed conditions are giving rise to a new type of gardener. There is little opportunity nowadays for training a young man in the details of cultivating such a large range of plants as was the case twenty or thirty years ago, and I see little hope of this generation producing men the equal of the grand old experts of bygone days. Nevertheless, we shall always have our experts in accordance with the moving times; the brains are as good as ever and will be diverted to other channels, and if our aim is "progression," we shall be striving for something worth while. *W. F. Baker, Melton Constable Park Gardens.*

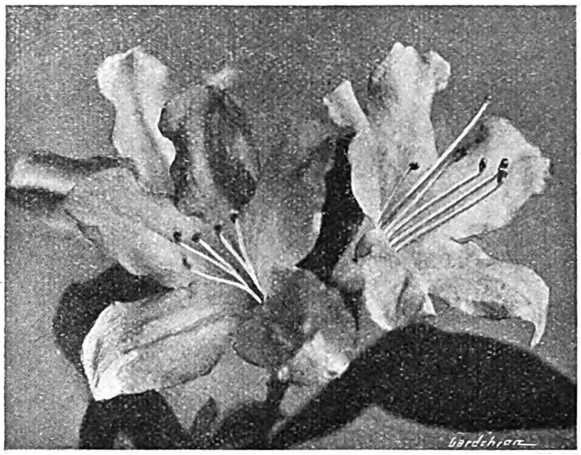

FIG. 129.—AZALEA MATSUKAZE

A variety representing a new race entitled Kurumesatsuki.

(See p. 245).

Rabbit Breeding for Fur.—Gardeners usually regard rabbits as a nuisance, but at a time when everyone is looking forward to a revival of prosperity and every avenue of progress is being carefully explored, the unquestionable opportunities offered by breeding rabbits for fur should not be overlooked. To those who, even now, after some years of established success, remain unconvinced of the profits to be obtained from this source, it may come as a surprise to learn that the Fur Board is paying 10s. 6d. each for first-grade Chinchilla and Sable pelts, and 8s. 6d. each for Havana, Argente and similar furs. It must also be remembered that the Fur Board buys for re-sale at still higher prices. Scientific and practical tests carried out at the Harper Adams Agricultural College have proved that the total cost of feeding these rabbits on concentrated foods at commercial prices (which is naturally more expensive than when the breeder relies mainly on surplus garden or farm produce), from birth to an age suitable for pelting, does not exceed 4s. each, and this sum will in many cases be reimbursed by the sale of the carcase alone. There can be few hobbies or side-lines which show such a handsome return as this, and I think if the fact were more widely known, many people in town as well as country, would be able to add to their incomes, and that of the nation, by producing natural rabbit furs on a much larger scale. *E. Bostock Smith, Heaselands, Canterbury.*

Apple Adams's Pearmain.—Referring to the article by *A. Petts* (March 16) on Apple Adams's Pearmain, I had this variety under cultivation for several years at Bussock, Newbury, and found it one of the best late sorts, but only so when left on the tree until very late in the autumn. As regards its origin I see it is referred to by R. Dean in *Gard. Chron.*, April 6, 1901, p. 213, as follows:—"To the first half of the nineteenth century we owe the production of such varieties as Adams's Pearmain, Cox's Pomona, Cox's Orange Pippin, raised from seed in 1830, although not distributed until several years afterwards." Judging by its flavour, it is probably a cross between Ribston Pippin and Winter Queening. Another late variety which I think is almost as good is Baxter's Pearmain; with me both were good and regular croppers. *W. H. Clark, Cornford House Gardens, Pembury, Kent.*

Gardeners' Pay and Status.—The only way to raise the status and pay of head gardeners and men throughout the British Isles, is for those concerned to become members of the Professional Gardeners' Association, form local branches, and arrange monthly lectures for the furtherance and experience of the under-gardeners. For particulars and rules, apply to Mr. G. Reid, Secretary, Pollard Hall Gardens, Gomersal, Leeds. *F. Capp, Nostell Priory Gardens, Wakefield.*

EXPERIMENTS ON THE CONTROL OF THE CARROT, ONION, AND CABBAGE ROOT FLIES.

Some of the earliest records of the damage done to crops by insects in this country concern flies attacking various vegetables. In the middle of the last century Curtis recorded their prevalence, and in the annual reports compiled by Miss Ormerod reference is frequently made to them.

The life histories of these flies have been gradually worked out and, from 1920 to 1925, K. M. Smith, at Manchester University, made observations upon them and carried out experiments with a view to preventing the damage done by these pests.

Experimental work in this direction has chiefly aimed at the discovery of some suitable substance which would act as a repellent to the flies, so that when applied to the soil near the plants, the smell would be capable of deterring the female fly from laying eggs there. This, indeed, seems to be the most hopeful line of work, since it is well-known that once the eggs have hatched and the larvae have commenced to feed, very little can be done to counteract the attack. The old remedies of lime and soot, or sand impregnated with paraffin, scattered among the plants, were probably partially effective in keeping off the flies, but Smith, in his experiments, employed a great variety of aromatic compounds, some of which showed considerable promise.

Since the loss due to these attacks is so widespread it was thought advisable to carry out experiments in as many parts of the country as possible in order to obtain definite information on the relative value of certain recommended substances. A scheme was accordingly prepared and the experiments carried out by entomologists at many Agricultural Colleges and University Departments throughout the country. The results here given are those of the experiments carried out in Staffordshire by the writer, who at that time was stationed at Harper Adams Agricultural College, Newport, Shropshire.

In that area, the three flies concerned are perennially responsible for a very great amount of damage, not only in gardens, but in the field. The facilities for the experiments were obtained in school and evening-school gardens, where the work could be carried out under very careful supervision, and the data kept with the greatest possible accuracy. The following details concern the treatments given to the plots, and the rate at which the substances were applied. The plots were all separated from each other by a narrow path, and were duplicated in order to obviate, so far as possible, differences due to situation and soil conditions.

The Carrot Fly.

Variety.—James' Scarlet Intermediate.

Cultivation, etc.—Seeds sown thinly at the usual time for the district on deeply worked soil. No fresh manure or fertilisers applied. Plants were singled to six inches so soon as large enough to handle, and all those pulled out were destroyed. Inter-cultivation was practised as required.

Experimental treatments:—

1. Creosote and precipitated chalk, 1:100. 2 oz. of the mixture per square yard.

2. Nicotine sulphate (40 per cent. Nicotine) and precipitated chalk, 1:12. 2 oz. (approximately) per square rod.

3. Naphthalene (Grade 16). 2 oz. per square yard.

Three applications in each case:—(1) About 10 days before thinning (May 10, approximately); (2) at thinning (May 20 approximately); and (3) about 10 days after thinning (May 30, approximately).

Carrot Fly Experiments.

Centre.	Plot.	% Clean Plants.	% Attacked Plants.	Treatment.
Lichfield ...	A.	46	54	Nicotine sulphate.
	B.	46	54	
	A.	81	19	Naphthalene.
	B.	50	50	
	A.	30	70	Creosote.
	B.	53	47	
	A.	47	53	Untreated.
	B.	—	—	
Stafford ...	A.	50	50	Nicotine sulphate.
	B.	78	22	
	A.	74	26	Naphthalene
	B.	77	23	
	A.	51	49	Creosote.
	B.	44	56	
	A.	50	50	Untreated.
	B.	45	55	
Wombourne ...	A.	48	52	Nicotine sulphate.
	B.	88	12	
	A.	98	2	Naphthalene.
	B.	99	1	
	A.	90	10	Creosote.
	B.	91	9	
	A.	71	29	Untreated.
	B.	71	29	

Average for all Centres.

	% Clean Plants.
Nicotine sulphate ...	= 59·3
Naphthalene	= 79·8
Creosote	= 59·8
Untreated	= 56·8

Note.—A. and B. represent duplicated plots.

Discussion of Results.

The untreated plots yielded an average of rather more than fifty per cent. of clean plants, and this figure was not materially improved upon by either the creosote or Nicotine sulphate treatment. Naphthalene gave easily the best yield of clean roots, an average of nearly eighty per cent. It is most significant to record, here, that the untreated plots, especially at Stafford and Wombourne, gave a much better yield of clean plants than is usual. The writer was told, in fact, that certainly for the past twenty years no good Carrots had been grown in the garden at Wombourne, and even the crop of the untreated plot was regarded as good. In the same garden, about twenty yards from the experimental plots, were other small beds of Carrots, and these were a complete failure, not one good Carrot being found. Some explanation is therefore needed for the good result on the untreated plots in the trial. Here the plots were separated only by a path two feet wide, and it is almost certain the smell of naphthalene was sufficient not only to keep off the flies from the plot treated with that substance, but also to protect adjacent plots in some measure. Had the untreated plots been removed a considerable distance from the naphthalene plots, it seems almost certain that they would have produced only a very poor crop.

The Onion Fly.

Variety.—Cranston's Excelsior.

Cultivation, etc.—Seeds sown thinly in drills on the plots in spring, and plants thinned to six inches apart when large enough to handle. All plants pulled out were destroyed.

Experimental treatments:—

1. Chlor-cresylic acid and precipitated chalk, 1:100. 2 ozs. per square yard.

2. Naphthalene (Grade 16). 2 ozs. per square yard.

3. Nicotine sulphate (40 per cent. Nicotine) with precipitated chalk, 1:12. 2 ozs. per square rod.

Three applications in each case:—(1) May 20, approximately; (2) May 30, approximately; and (3) June 10, approximately.

With the exception of corrosive sublimate (mercuric chloride), all the substances employed were in the form of fine powders, and were very easily applied by means of a tin with a perforated lid. Such applications can be very rapidly carried out, and involve little extra time and labour. In arriving at the results, every individual plant was lifted and examined. The dates shown for the times of application of the substances under trial are only approximately accurate and varied with each individual centre according to weather conditions and time of sowing.

Onion Fly Experiments.

Centre.	Plot.	% Clean Plants.	% Attacked Plants.	Treatment.
Lichfield ...	A.	70	30	Chlor-cresylic acid.
	B.	81	19	
	A.	78	22	Naphthalene.
	B.	82	18	
	A.	69	31	Nicotine sulphate.
	B.	78	22	
	A.	76	24	Untreated.
	B.	82	18	
Stafford ...	A.	65	35	Chlor-cresylic acid.
	B.	42	58	
	A.	75	25	Naphthalene.
	B.	62	38	
	A.	48	52	Nicotine sulphate
	B.	33	67	
	A.	53	47	Untreated.
	B.	33	67	
Wombourne ...	A.	56	44	Chlor-cresylic acid.
	B.	25	75	
	A.	61	39	Naphthalene.
	B.	44	56	
	A.	21	79	Nicotine sulphate.
	B.	13	87	
	A.	39	61	Untreated.
	B.	19	81	

Average for all Centres.

		% Clean Plants.
Chlor-cresylic acid	=	56·5
Naphthalene ...	=	67·0
Nicotine sulphate	=	43·6
Untreated ...	=	50·3

Note.—A. and B. represent duplicated plots.

Discussion of Results.

As with Carrot fly, naphthalene has given the greatest measure of control, although in a less marked degree. Nicotine sulphate seems to have been quite unsuccessful, and owing to its cost and the small rate at which it can consequently be applied, it must be regarded as unsatisfactory.

This is rather a puzzling result, since Smith in his experiments in Cheshire, regarded Nicotine sulphate as a very promising substance against

Onion fly. He, however, used a five per cent. mixture with chalk, and made about ten applications during the growing season. At all centres the crop was regarded as very satisfactory, but the attack by the fly was not so severe as in some seasons.

The Cabbage Root Fly.

Variety.—Veitch's Autumn Giant Cauliflower.

Cultivation, etc.—Plants raised from seeds at each centre and well planted, so far as possible in favourable weather. Inter-cultivation as required.

Experimental treatments :—

1. Creosote and precipitated chalk, 1:100. ¼-oz. per plant (approximately).
2. Chlor-cresylic acid and precipitated chalk, 1:100. ¼-oz. per plant (approximately).
3. Corrosive sublimate solution, 1 oz. in 8 gallons. ¼-pint per plant (approximately).
4. Naphthalene (Grade 16). ¼-oz. per plant (approximately).

Three applications in each case :—(1) At the time of planting out; (2) about ten days after planting; and (3) about twenty days after planting.

Cabbage Root Fly Experiments.

Centre.	°/₀ Healthy Plants.	°/₀ Attacked Plants.	Treatment.
Stonnall ... ... Examined at intervals up to September 3	76	24	Untreated.
	62	38	Naphthalene.
	86	14	Creosote.
	46	54	Chlor-cresylic acid.
	95	5	Mercuric chloride.
Willenhall ... ... Examined at intervals up to September 6.	89	11	Untreated.
	100	0	Naphthalene.
	99	1	Creosote.
	98	2	Chlor-cresylic acid.
	99	1	Mercuric chloride.

Discussion of Results.

At both centres, the mercuric chloride treatment was successful in giving a good plant, although it has certain disadvantages in use. It is a poison, and must be used with care, only by capable people. It should be kept under lock and key, and well labelled, so that it cannot be mistaken for any other substance. The application involves making a solution which is a more lengthy process than applying a dry powder. Despite these drawbacks, however, it has an additional advantage on land infected with Plasmodiophora brassicae, the club root fungus, in that at the strength used it also gives a very good control of this disease.

With regard to the other substances used, little information can be drawn from the results of the plots at Willenhall, since the attack there was slight. At Stonnall, creosote gave a promising control and resulted in more good plants than any other treatment except mercuric chloride. Naphthalene here was not encouraging, though at Willenhall it was actually the best plot. Careful examination of the Stonnall plots, however, showed that failures with naphthalene were largely due to a scorching effect on the plants, and it accentuated the very dry soil conditions then existing. The failures nearly all occurred immediately after planting, and are not attributable to the fly attack. It is probable, therefore, that this substance must be used with discretion in dry periods, and not allowed to remain in a heap on the soil immediately around the plants.

It is interesting to note, here, that Mr. F. R. Petherbridge, of the School of Agriculture, Cambridge, obtained excellent results with naphthalene in his experiments, the treated plot being almost free from attack, while the mercuric chloride plot was second best. *S. G. Jary, B.A., Advisory Entomologist to the Southern Province, The University, Reading.*

POTATO FUTURES.

I have been interested in growing, buying and selling Potatos for forty years, and think the time has come for taking stock of what has been done, and forcasting what should be done.

In the 'eighties and 'nineties of last century, such well known varieties of Potatos as Abundance, Beauty of Hebron, Duke of York, Epicure, Sharpe's Express, Snowdrop, Up-to-Date and British Queen, were introduced and many of them continue to this day.

In the first ten years of the present century Findlay's varieties were rapidly taking first place and were followed by Mackelvie's and others —Golden Wonder, Great Scot, King Edward, Ally, Majestic, Arran Chief, Arran Victory and Kerr's Pink.

Wart disease existed in Shropshire and Staffordshire prior to 1901. In 1908 systematic work was begun at the Harper-Adams College, Newport, by Mr. G. T. Malthouse. In that work the Board of Agriculture and Fisheries took an interest. One of their inspectors, Mr. G. C. Gough, had discovered that the variety Snowdrop was immune to wart disease; soon other varieties were also found to be immune to this terrible plague.

Shortly thereafter, the Board of Agriculture and Fisheries started investigational work of its own at Ormskirk, with the late Mr. John Snell in charge. Mr. Snell was a brilliant original worker, and things moved rapidly. A policy was formulated and infected areas were scheduled. Varieties susceptible to wart disease were not allowed to be planted in such areas, and that has been the policy in practice up till the present, with slight modifications. It must be recorded as successful; the spread of wart disease has been stayed.

Concurrent with the policy of control carried on officially by the Government, raisers turned their attention to discovering and raising varieties which were immune to Wart disease. Sutton's Abundance and its many synonyms were found to be immune and useful; so were Golden Wonder and Kerr's Pink. New varieties, such as King George, Ally, Great Scot and Majestic appeared on the market but nothing has come along to take the place of Duke of York (and its synonyms), or British Queen, King Edward, Up-to-Date and Arran Chief.

It is here I am going to strike in with my suggestions. Officially, for a number of years, no new variety has been recognised or encouraged in any way unless immune to Wart disease. Raisers are invited to send seedlings to the Ministry of Agriculture's Station, Ormskirk, or to the Scottish Department of Agriculture's Station at East Craigs, in their second year, to be tested for wart disease. Single tubers are accepted, so that the owner may know at the earliest stage possible if the new variety is immune. The result of this has been that every seedling which did not stand up to the official immunity test was destroyed.

In face of the fact that under 100,000 acres out of a total of 2,500,000 acres of Potato land are scheduled as infected areas, I hold that raisers should develop the very finest of their non-immune varieties. These 2,400,000 acres are calling for successors to King Edward, Up-to-Date, Duke of York and Arran Chief, and so are the British public.

There is something about these old varieties which has not yet been attained in the immune varieties. I do not suggest that the Government should take up the testing of susceptible varieties, but I do propose that raisers and introducers should pay attention to *their very best* non-immune seedlings, and develop them with a view to introduction. It can be done without the patronage of the authorities, and will be good policy for the Potato industry.

Remember that wart disease is now held well in check, and that the best authorities declare that virus diseases are far more serious to-day than wart disease, and are in no way mixed up with the problem of wart disease. *William Cuthbertson.*

FRUIT REGISTER.

STURMER PIPPIN.

Pomologists are busy in their efforts to remedy the scarcity of good late dessert Apples, but recent introductions will have to be tried for some years under varying conditions before it can be stated confidently that the century-old Sturmer Pippin has been superseded.

It makes an excellent bush of compact habit, comes into bearing early and bears regularly, being one of that comparatively small number which are self-fertile. In a cold season it is apt to be of poor quality and texture, as it requires a long season to mature, for which reason it is not altogether satisfactory in a cold soil or situation. Such a late variety should obviously be allowed to retain its fruits so long as possible, and I have gathered it so late as December 12, after a wet autumn, without avoiding shrivelling. To keep the fruits in good condition until May, or even later, they should be stored in boxes between layers of paper, always delaying this for a week or two after picking. The fruits are always pleasantly acid, but with a very distinct flavour at their best.

Although so late in maturing, Sturmer Pippin is one of the earliest to come into flower. It is one of the few varieties with fruits of a brown or bronze colour in a good season, with just a touch of russet; the fruits are of medium dessert size, five or six to the pound when full grown. *A. Petts.*

PUBLIC PARKS AND GARDENS.

The Parks Committee of the County Borough of Dewsbury has decided to form a putting green at Rock House Recreation Ground, and also to convert its grass tennis courts in the County Borough of Dewsbury into hard ones.

The Twickenham Town Council is considering proposals for the laying out of the Orleans House frontage and the provision of an open-air swimming pool.

The Egham Urban District Council has accepted a gift of sixteen acres of land at Ankerwyke Corner, Egham, with buildings and a sum of £200 towards the erection of a bathing pavilion; also the seven acres of land near Glanty Corner, Egham, for a children's recreation ground.

The Southampton Town Council has decided to take steps to acquire certain portions of the Itchen River frontage at Bitterne Park for a recreation ground.

A Sub-committee of the Parks Department of Edinburgh Town Council had before them recently a proposal by Councillor Wilson McLaren that the Corporation should acquire as a public park the farm of Swanston, including Swanston farm cottage and village, also the hillside of Caerketton and Allermuir; it was decided to delay the matter to enable the Committee to visit the ground.

The Bournemouth Town Council has received sanction to borrow £37,500 for the extension of the West Undercliff Promenade and £7,500 for the new pleasure grounds at Iford.

The Llanelly Town Council has authorised the Town Clerk to take steps to raise a loan of £38,385 for the town centre scheme, which includes the lay-out of a three-acre site opposite the Town Hall as an open square.

The Ministry of Health held an enquiry recently into an application by the Colwyn Bay Urban District Council for sanction to borrow £2,100 for the purchase of land at Bronnant for various purposes, including the establishment of a nursery for the propagation of plants.

SOCIETIES.

ROYAL HORTICULTURAL.

March 26 and 27.—There was a particularly bright show in connection with the fortnightly meeting of the Royal Horticultural Society on these dates. The New Horticultural Hall was fairly well filled with a pleasant variety of spring flowers, with a sufficiency of fruits and vegetables to make it a representative show. Orchids were again shown in quantity and of especially good quality. As before, the useful Cymbidiums predominated, but there were also many plants of Oncidium, Cattleya, Cypripedium and other genera. The Orchid Committee recommended two First Class Certificates and seven Awards of Merit to novelties. Alpines were shown in greatly increased numbers and nearly all were of first-rate quality. Forced shrubs of various kinds, Carnations and Roses were prominent. The Floral Committee recommended three Awards to novelties. The new Sewell Medals, for alpines in pots or pans, were won by Messrs. Casburn and Welch in the trade class, and by C. Kirch, Esq., in the amateur class. In spite of the difficulties of the season, Daffodils were quite good, and the several large displays added to the brightness of the show. The Daffodil and Tulip Committee recommended one Award of Merit to a novelty. The Fruit and Vegetable Committee made no award to novelties, but in the hall there were good collections of vegetables and of Apples.

Orchid Committee.

Present : Mr. Fred J. Hanbury (in the chair), Mr. Gurney Wilson (Hon. Secretary), Prince Shimadzu, Sir John Rutherford, Mr. S. Low, Mr. Robert Paterson, Mr. T. Armstrong, Mr. A. McBean, Mr. Fred. K. Sander, Mr. Charles H. Curtis, Mr. A. Dye, Mr. H. G. Alexander, Mr. T. W. Taylor, Mr. W. H. Hatcher, Mr. S. Flory, Mr. J. E. Shill, Mr. H. H. Smith and Mr. J. Cowan.

First Class Certificates.

Brasso-Cattleya Prince Olaf (*C. Prince Shimadzu* × *B. C. Nena*).—A splendid Orchid with very large and broad, rosy-mauve petals and paler sepals. The big, bold lip is bright violet-purple with a frilled, mauve edge, and pale gold throat. Shown by Messrs. Black and Flory.

Laelio-Cattleya Titymoma (*C. Tityus* × *L.-C. Momus*).—A beautiful hybrid of fine proportions and ample size. The fringed petals are rosy-mauve, as are the petals, but the latter are a trifle paler. The lip is very shapely, frilled purple, shaded with royal purple and margined with mauve at the front, and with a veined, old-gold throat. Shown by Messrs. Cowan and Co.

Award of Merit.

Cymbidium Marabou, Exbury var. (*C. insigne* × *C. vesta*).—A very dainty variety, with flowers of the purest white, except for pale pink dottings and a very pale lemon-yellow crest on the lip. Shown by Lionel de Rothschild, Esq. (grower Mr. B. Hills), Exbury, Southampton.

Miltonia Nadia var. Helen Paterson (*M. Charlesworthii* × *M. Princess Margaret*).—A lovely variety with the lip and petals of a soft clear rosy-mauve shade; sepals much paler, shading to white at the tips; the mask on the lip is soft yellowish-brown with a white margin. Show by Robert Paterson, Esq. (gr. Mr. A. Merry), Stonehurst, Ardingly, Sussex.

Miltonia Lucia var. Molly Paterson (*M. vexillaria* × *M. Princess Margaret*).— In this large-flowered form the petals are deep purple with white tips; sepals white with pale mauve purple marks at the base. Lip large, white, flushed with purple below the white-rimmed, red-brown mask. Shown by Robert Paterson, Esq.

Cymbidium Plover, Wyld Court var. C. Lowio-grandiflorum × *C. Pauwelsii*).—This bold Orchid is very like a fine form of C. Lowianum. The sepals and petals are green and the lip is creamy-white with deep red-brown markings. Shown by Sir W. Cooke, Bart. (gr. Mr. H. Butcher), Wyld Court, Hampstead Norris, Newbury.

Odontioda Velasquez (*O. Coronation* × *O. var. unknown*).—A hybrid of good form, but with the flowers rather too closely set on the spike. The petals are red on a cream ground and have purplish margins; the sepals are similarly coloured, except that they have mauve-purple apices. Lip small, pale mauve, red and gold. Shown by Gus Mayer, Esq. (gr. Mr. R. Cottam), Wistlers Wood, Woldingham.

Cymbidium Vesta var. sanguinolentum (*C. Alexanderi* × *C. insigne*).—In this distinct form the blush sepals and petals are flushed with pink and the blush lip is heavily marked with blood red. Shown by Messrs. Stuart Low and Co.

Cymbidium Puffin var. Calypso (*C. Dryad* × *C. Martin*).—A small flower, but very distinct. The sepals and petals are milk-white, with rose-tinted upper margin, while the white lip is heavily marked with deep velvety red. Shown by Messrs. H. G. Alexander, Ltd.

Groups.

Cymbidiums were once again a great feature of the groups of Orchids which extended the whole length of one side of the new hall.

Sir Jeremiah Colman Bart., (Orchid grower Mr. B. Perfect), Gatton Park, Reigate, contributed a delightful group wherein Brasso-Cattleyas were particularly good, these including B.-C. Gatton Lily, very fine; B.-C. Mildred, B.-C. Speciosa var. Lady Colman, B.-C. Gatton Lily var Triumph, B.-C. Gatton Snowflake, and B.-C. Cliftoni var, magnifica; Cattleya Cowanae; alba, and L.-C. Eldorado, were also very fine, while Cymbidiums were an excellent background to a grand display and along the front were such interesting Orchids as Cymbidium Devonianum, the long Sophro-Laelia Marriotiana, Epidendrum Endresii, Sarchochilis Hartmannii, Megaclineum purpurio-rachis, Polystachya paniculata, Coelogyne pulchella, C. sparsa, Masdevallia xanthina, and Leptotes bicolor.

Messrs. Sanders displayed a small forest of Cymbidium spikes borne by excellent plants. A few of the finest were C. Erica Sander var. Sunstar, C. Alexanderi var. The Gem, C. Adonis var. Dawn, C. Nelly, C. Unique, and C. Louise var. Perfection. Grouped with these and other fine varieties were Cattleya Avalanche, and Laelio-Cattleya John Waterstraedt, of fine colour; Brasso-Cattleya St. Andre, Lycaste Balliae var. Mary Gratrix, Oncidium pubes, Masdevallia civilis and Pleurothallis Roezlii.

Odontoglossums were finely displayed by Messrs. Charlesworth and Co. O. Matador made an excellent centre-piece, and on either side were long spikes of O. crispum in variety, O. Pyramus, O. Laurentia, O. Princess Yolande and O. xanthinum. Odontiodas were represented by O. Vivienne, O. Nanette, O. Pittae, O. Ronx and O. Chanticler. Besides all these good things the Haywards Heath firm exhibited Pholidota convallaria, Epidendrum Endresio-Wallisii, Cirrhopetalum picturatum and the old Masdevallia Shuttleworthii.

Messrs. J. and A. McBean had Cattleya Jupitus in fine condition, the spike carrying four glorious flowers; Miltonia Bleuana rosa was also fine, as were Cymbidium Alexanderi var. roseum, C. Pearl, C. Pauwelsii, C.Arabella, the effective. Oncidium McBeanianum, Odontioda Lambeauianum and the quaint old Arpophyllum giganteum.

Messrs. Stuart Low and Co. had a bright display of Dendrobrium Brymerianum, D. Pierardii, Laelio-Cattleya Illustrious, L.-C. Sladdeni, L.-C. Leemaniae, L.-C. Luminosa, Sophro-Laelio-Cattleya Beta, S.-L.-C. Edith Tack, and several Cypripediums.

Mr. J. Evans showed fine specimens of Platyclinis glumacea, Dendrobium Thwaitesiae D. Pierardii and Cymbidium Alexanderi.

Floral Committee.

Present : Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. R. B. Long, Mrs. Ethel M. Wightman, Rev. Rollo Meyer, Mr. Donald Allan, Mr. J. R. Riding, Mr. Courtney Page, Mr. R. Findlay, Mr. W. B. Gingell Mr. C. F. Langdon, Mr. J. M. Bridgeford, Mr. D. B. Crane, Mr. Charles E. Pearson, Mr. G. W. Leak, Mr. William Howe, Major George Churcher, Mr. M. Allwood, Mr. E. R. Janes and Mr. W. F. Cartwright (Secretary).

Section B.—Mr. Charles T. Musgrave (in the chair,) Mr. E. A. Bowles, Mr. W. G. Baker, Mr. W. J. Bean, Mr. G. Reuthe, Mr. W. B. Cranfield, Mr. Reginald Cory, Mr. C. W. Williams, Mr. R. C. Notcutt, Mr. G. Yeld, Lady Beatrix Stanley, Mr. Gerald W. E. Loder, Sir William Lawrence, Bt., Mr. T. Hay, Mr. A. Bedford, Mr. F. J. Preston, Mr. L. R. Russell, Mr. Clarence Elliott, Mr. J. Comber and Mr. N. K. Gould, (Secretary).

Awards of Merit.

Leucocoryne ixioides var odorata.—In general appearance this Liliaceous plant is much like a giant Glory of the Snow (Chionodoxa Luciliae) with the added merit of delicious fragrance. The blue and white flowers are borne on slender, graceful stems nearly two feet in length. The species was illustrated as Brodiaea ixioides in *Bot. Mag.*, tab. 2382. It is a native of Chili, where the present exhibitor collected bulbs last year. Shown by Mr. Clarence Elliott.

Rhododendron euchaites.—Forrest No. 12125. Kingdon Ward, No. 3040. A brilliant truss of medium-sized, shining ruby-red flowers with a large, collar-like calyx of the same colour. The leaves are rich green and relatively small. Shown by Lady Aberconway (gr. Mr. F. C. Puddle), Bodnant, North Wales.

Rhododendron Delight.—A hybrid of R. praecox and R. ciliatum. A vigorous spreading bush, with neat foliage midway between the two parents, and bearing an abundance of flowers, was shown. The flowers, which are in trusses of pairs and occasionally threes, are rather smaller than those of R. ciliatum,and of beautiful apple blossom-pink flushing. Shown by Messrs. R. Gill & Son.

For Trial at Wisley.

Primula Peakland Beauty.—A very floriferous blue Primrose. The flowers were all pin-eyed and had a good rich yellow zone. Shown by D. B. Milne, Esq., Sabine Hay, South Darley Matlock.

Groups.

No doubt in view of the new competition for the Sewell Medals, alpines were extensively shown, and there were many very beautiful plants on view. In the competition the trade medal was won by Messrs. Casburn and Welch, who staged lovely plants of Saxifragas Burseriana Gloria, Burseriana sulphureum, Irvingii, Jenkinsii and Paulinae, and Primula Allionii. C. Kirch, Esq. (gr. Mr. G. Harris), Edenhall, Beckenham, had the best of four amateur collections and was awarded the medal for especially good plants of Saxifragas Burseriana speciosa, lilacina, Faldonside Allionii and its white variety, and Shortia uniflora grandiflora R. Bevan, Esq., Crowsley Grange, Henley-on-Thames, had excellent plants of Androsace ciliata and Fritillaria karadaghensis in his exhibit.

An extensive collection of excellent alpines in large pans and pots was staged by Mr. Clarence Elliott, who included magnificent plants of various Saxifrages including the varieties Jenkinsii and Griesbachii Wisley, var., Crocuses and Muscari. Messrs. M. Prichard and Son filled considerable table space with batches of Androsace sarmentosa, Salmont's variety, Anemone fulgens, Primula rosea and other alpines. Messrs. Casburn and Welch, had a rock garden planted with alpines and dwarf Conifers, and Messrs. Tuckers planted their rock garden with appropriate plants.

A length of tabling was filled with alpines in pots and pans by C. Kirch, Esq. (gr. Mr. G. Harris), Edenhall, Beckenham, who had particularly good specimens of Saxifraga Jenkinsii, S. Griesbachii, Wisley var., S. His Majesty, S. lilacina, Primula Allionii and Androsace pyrenaica. Messrs. Patrick's grouped Acacias and Conifers behind a low rockery planted with alpines. Adjoining their Apples, Messrs. J. Cheal and Sons set out a good exhibit of alpines.

The Rev. Rollo Meyer (gr. Mr. J. P. Izzard), Watton Rectory, Hertford, showed masses of Iris reticulata, I. Cantab and vases of Viburnum fragrans. Messrs Barr and Sons had an exceedingly attractive rock garden exhibit with breadths of Hepatica angulosa, Iris reticulata, Cyclamen Coum, Fritillarias and Erica carnea. Messrs. Pulham and Son made a small sandstone rock garden. Mr. George G. Whitelegg showed Rhododendrons, deciduous Azaleas and alpines, and Mr. George E. P. Wood had a display of alpines. With a background of floriferous double Cherries, Messrs. D. Stewart and Son grouped Hyacinths, Daffodils and Muscari. The Misses Hopkins had a neat little rock garden exhibit. Mr. Gavin Jones used Saxifrages, Drabas, Ericas and Conifers effectively, while Messrs. W. H. Rogers and Son gave prominence to Prostranthera rotundifolia amongst the alpines in their exhibit. Messrs. Hodsons associated alpines with Rhododendrons and Mr. F. Therkildsen planted Sempervivums, Saxifrages and other lowly plants in his rock garden.

In an attractive display, Messrs. Waterer, Sons and Crisp grouped Rhododendron caucasicum, R. Handsworth Scarlet and Osmanthus Delavayi in association with early spring flowers and alpines. In a well-arranged exhibit, Messrs. W. Cutbush and Son displayed double-flowered Cherries, Laburnums and Azaleas. In a large floor group, Messrs. L. R. Russell, Ltd., displayed various flowering shrubs, including a good collection of Clematis and Azaleas. Messrs. Hollamby had large bushes of Hamamelis arborea and the dwarf Gaultheria procumbens. Mr. G. Reuthe had an interesting collection of plants and shrubs with trusses of Rhododendrons.

An admirable collection of shrubs was arranged by Messrs. Robert Veitch and Son, who included large sprays of Magnolia salicifolia, M. Lennei, M. Alexandrina, Raphiolepis Delacourii, Kurume Azaleas and several particularly good Camellias. In a corner space, Messrs. R. Gill and Son showed several large bushes of Rhododendrons, including the new varieties Delight, and ample sprays of R. Cornubia, R. Bernard Gill, R. argentea and Magnolia Campbelli. In another place, they set up many spathes of Richardia africana and Anemones.

The Duke of Wellington (gr. Mr. H. J. Beckenham), Ewhurst Place, Basingstoke, contributed a well-arranged group of dark blue stellata Cinerarias, Hymenocallis (Ismene calathina) and Iris fimbriata. The Hon. Marshall Brooks (gr. Mr. A. Carter), Portal, Tarporley, Cheshire, had a dozen or more magnificent plants of varieties of Clivia miniata; Messrs. Dobbie and Co. staged many splendid plants of large-flowered Cinerarias which illustrated a desirable strain of first-rate cultivation. Mr. G. H. Dalrymple again had a large collection of his coloured Freesias. Messrs. Stuart Low and Co. grouped Anthuriums, Hippeastrums, Acacias and Azaleas, and on the floor had some large bushes of Camellias.

Particularly good cut Roses were shown by Mr. George Prince and Mr. Elisha J. Hicks. The former had large vases of I. Zingara, Shot Silk and Etoile d'Hollande in his collection; while the latter included Mrs. H. Stevens, Charles E. Shea and Angèle Pernet of good quality. Their usual first-rate collections of Carnations were staged by Messrs. C. Engelmann, Ltd., Messrs. Stuart Low and Co., and Messrs. Allwood Bros. Lady Brodie Henderson (gr. Mr. W. Eggleton), Epping House, Hertford, sent over a dozen vases of distinct varieties of Sweet Violets of considerable merit. Mr. Baldwin Pinney also showed good Violets.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. G. W. Leak, Mr. G. Monro, Mr. P. D. Williams, Mr. Peter R. Barr, Mr. W. B. Cranfield, Mr. H. Smith, Mr. H. G. Hawker, Mr. J. S. Arkwright, Mr. L. G. Richardson, Mr. G. L. Wilson, Mr. A. W. White, Mr. F. A. Secrett, Mr. Charles H. Curtis, Mr. J. D. Pearson, Rev. Rollo Meyer, Mr. F. Barchard, Mr. G. Churcher, Mr. W. F. M. Copeland, Mr. W. Poupart, and Mr. A. Simmonds (Secretary).

Award of Merit.

Narcissus Whiteley Gem.—A grand Incomparabilis variety of fine substance and colouring, exhibited as a show flower. The bloom is about three inches across, with spreading, broad perianth, segments of rich primrose-yellow, the tubular cup about one inch long and spreading and crinkled at the mouth, being apricot coloured, paler at the throat and enriched with orange at the edge. The blooms were borne erect on long, slender, but firm stems. Shown by R. F. Calvert, Esq., Coverack, Cornwall. It was raised by Mrs. Brodie of Brodie.

Groups.

Narcissi and Tulips were shown fairly extensively at this meeting, the former especially being represented by several grand collections. Messrs. J. R. Pearson and Sons had a fine bank of Narcissus blooms, representing many different types. At the back, fine large Trumpet sorts, as the giant Tresserve, King Alfred, Van Waveren's Giant and Victoria were in evidence, while other choice Trumpet varieties which demanded attention were Vestan, rich yellowish-cream trumpet and palest cream perianth segments; The Don, of similar colouring but a trifle richer in the trumpet; White Dame; Elfrida Pearson, very dainty; and Weardale Perfection. Numerous Incomparabilis Narcissi were represented, and there were very attractive vases of Narcissus Odorus var. rugulosus. Among the many outstanding sorts other than Trumpet varieties were Bernardino, Homer, Whitehall, Brilliancy, Sunrise and Croesus, together with several striking seedlings.

Messrs. Barr and Sons had a massed collection of Narcissi, in which were magnificent sheaves of the richly coloured Sunrise; the frilled and waved, rich golden Trumpet variety maximus, and Yellow Standard. The double-flowered Primrose Phœnix was well shown, and other notable sorts in this group were Winter Gold, Ptolemy, very fine; King Alfred, Beersheba and Sweet Adare. At the front of the display were groups of flower spikes of numerous named varieties of Lachenalias of very good quality.

Another very interesting collection of Narcissi was set up by Mr. J. L. Richardson, in which large Trumpet sorts were the dominant feature. There were magnificent blooms of the lovely Beersheba, other pale coloured sorts being Moira O'Neill, Mitylene, White Nile, White Emperor, Zionist, Marquis of Headfort, and the dainty Winsome; among rich golden-yellow Trumpet varieties the most striking were the magnificent Golden Chariot, Music Hall, Golden Prospect, Luxor, Arcs, Blaencona and Roko. Other sorts of outstanding merit in this well-staged group were Fortune, an Incomparabilis of rich colouring and fine texture; the popular Sunrise, Croesus, Glorious, Firetail and White Sentinel. There were also several good seedlings, unnamed.

Mr. G. L. Wilson showed a large number of the newer varieties of Narcissi, among which the most prominent were Beersheba, very fine and in splendid condition; and the lovely creamy-white, beautifully-shaped White Emperor, together with White Nile, Hymettus and Eskimo, all Trumpet sorts of similar colouring; the giant Kantara, Tenedos and the rich yellow King of the North. Mitylene was shown well, and there were also good blooms of Raider, Hispodar and Satellite.

In conjunction with their exhibit of dwarf spring bulbs and flowering shrubs, Messrs. D. Stewart and Son had a small collection of Narcissi, in which we noted good vases of Mrs. Martin Stewart, stated to be a Triandus hybrid, of large size considering its parentage and of palest cream colouring; Tony, a very charming giant Leedsii variety; Orange Cup, Buttercup, Mrs. E. H. Krelage and Lord Kitchener.

Near the centre of the hall, Messrs. R. H. Bath, Ltd., had a tastefully arranged floor group of Tulips in bowls, among the most striking of the many varieties displayed being La Reve, Dom Pedro, Zulu, Blue Bird, Pride of Haarlem, Eclipse, Bartigon, the golden-yellow W. T. Ware, La Tulipe Noire, Farncombe Sanders, Zanzibar and Faust; they also had a few bowls of Hyacinths.

Messrs. G. W. Miller had a mixed collection of Tulips, Narcissi and Hyacinths, together with other spring flowers, such as Primroses in variety, Saxifrages and Pulmonarias. Among Tulips, the outstanding sorts were the double-flowered El Toreador, Rising Sun, Pride of Haarlem, Prosperity and Couronne d'Or, while noticeable Narcissi were Comrade and Bernardino.

An interesting exhibit demonstrating the Cornish methods of marketing Narcissi and Broccoli was set up under the auspices of the Cornwall County Council, and attracted a good deal of attention. The Narcissi were in grand condition and magnificently packed, while the Broccoli were packed in crates as despatched to the markets, which now embrace Continental so well as British ones.

Fruit and Vegetable Committee.

Present: Mr. E. A. Bunyard (in the chair), Mr. J. Cheal, Mr. W. Poupart, Mr. Edwin E. Beckett, Mr. T. Pateman, Mr. E. Neal, Mr. J. G. Weston, Mr. A. Bullock, Mr. F. Bostock, Mr. W. H. Divers and Mr. A. N. Rawes, Secretary.

There were no new fruits or vegetables before this Committee, and other than that of judging the exhibits in the hall, it had no special business to conduct.

Groups.

Messrs. J. Cheal and Sons, Ltd., staged the only exhibit of fruits at this meeting. It comprised a grand collection of Apples, in splendid condition for so late in the season, the outstanding sorts being Encore, Crawley Beauty. Prince Albert, Ontario, Newton Wonder, King George V, Beauty of Stoke, Christmas Pearmain, Adams's Pearmain and Chelmsford Wonder; a very creditable display.

Salads, in excellent condition, were tastefully displayed by Messrs. Sutton and Sons. There were large baskets of Mustard, Cress and Corn Salad; grand Cucumbers of the variety Sutton's Improved Telegraph; the China Rose Winter Radish, and French Breakfast Radish; fine Cabbage Lettuces of the varieties Golden Ball and Sutton's Ideal; Witloof Chicory, Ivory White Seakale, salad Potatos, Water Cress, and grand Endive; a very instructive and excellently staged exhibit of splendid produce.

MANCHESTER AND SALFORD GARDENERS'.

The first Annual Meeting of this Guild was held at the Town Hall, Manchester, and was presided over by the Lord Mayor of Manchester. Colonel T. Westcott.

The Hon. Secretary, Mr. W. G. Ayres, reported that the Guild had only been in existence since June, 1927. Since then, plants and bulbs had been distributed to owners of small gardens and window boxes in the congested areas of both Manchester and Salford. The Parks Department of both cities had co-operated with the Guild by arranging to supply soil from the main parks and recreation grounds.

The Guild provided a panel of experts which worked in co-operation with the *Evening Chronicle* in the organisation of a Gardens Competition, and classes were provided in the competition for every kind of garden, including the more humble back-yard and window-box garden.

The Guild was already forming local branches upon many of the housing estates, and it was the hope of the Committee to form a branch upon every housing estate within its area. The business meeting was followed by an open meeting, at which Mr. W. W. Pettigrew, V.M.H., gave an address on "Town Gardening." A special plea was made to people occupying small houses to ornament them with window-boxes.

During the evening it was reported that one of the Manchester business houses had offered to present the Guild with two hundred window-boxes to distribute to tenants with no gardens.

READING GARDENERS'.

The fortnightly meeting was held in the Abbey Hall on March 18, when there was an excellent attendance presided over by the President, Mr. Frank E. Moring.

The lecture for the the evening was on "Strawberries," by Mr. M. Goddard, The Gardens, Bear Wood, who stated, in dealing with the cultural requirements of Strawberries, that it was more difficult to succeed in obtaining first-rate crops than it was a few years ago, and it makes one wonder whether there is such a thing as "reversion" in this plant. One of the principal points to success was certainly the preparation of the soil, and useful hints were given on this, as well as the various methods of layering the fresh runners, planting, the renovating of old beds, mulching, watering, and the picking and packing of the fruits. The lecturer then dealt with the forcing of Strawberries in pots, and practical suggestions were made as to the layering of runners for this purpose, potting on, temperature of the greenhouse, watering, etc. In conclusion, he recommended that, where greenhouses were not available, frames should be utilised, for by planting good strong layers in these during August, fruits would be ready for gathering a fortnight earlier than from plants in the open. Among the varieties recommended were King George, Royal Sovereign, Sir Joseph Paxton and Waterloo. A really splendid discussion followed. at the close of which a hearty vote of thanks was tendered to Mr. Goddard for his most valuable and practical lecture.

DERBYSHIRE HORTICULTURAL.

The Annual General Meeting of the Derbyshire Horticultural Association was held in the Guild Hall, Town Hall, Derby, on March 14, when substantial advancement in all branches was reported.

A new record was established by the enrolment of over two hundred new members during the past year, while the appreciation of the general public for the annual show was reflected in the attendance, which numerically exceeded anything recorded previously. Prize money was increased by almost £40, and the balance sheet showed an excess of income of £30 over the year's expenditure, with net assets £243 5s. 4d.

The Chairman, H. T. Ann, Esq., congratulated the members upon the successful season, and expressed appreciation of the help he had received from the Hon. Secretary, Mr. W. Wardman, and Mr. Smith, Vice-Chairman. Mr. G. Potter, the oldest member of the Association, was made a life member, he having been connected with the Chrysanthemum Show movement for forty-two years.

There were six vacancies on the Committee, the successful candidates being: Mr. J. Maxfield, Darley Abbey; Mr. L. Smith, Derby; Mr. A. H Harrison, Melbourne; Mr. J. McCartney, Kingston Hall; Mr. H. Wilson, Derby; and Mr. W. R. Powell, Newton Park.

The summer visits had proved very popular and thanks were tendered to Mrs. Walter Evans, of Darley Abbey; Dr. F. Milburn, of Kingston College; W. E. Ann, Esq., of Darley Fields; G. Gee, Esq., of Duffield Bank; The President, J. A. Aiton, Esq., of Duffield Park; Captain Drury Lowe, of Locko Park; and H. Woolman, Esq., for making the visits to their gardens so very enjoyable. The winter lectures have been well attended by members of both sexes, and the initial display by amateurs at the recently introduced monthly exhibition of fruits and flowers was very encouraging.

TRADE NOTE.

Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle*.

Obituary.

John Bannatyne, junr. — The death is announced of Mr. John Bannatyne, junr., a partner of the firm of Messrs. Bannatyne and Jackson, Nurserymen, Hamilton, which took place at his residence, Lansdowne, Hamilton, after a brief illness. Deceased, who was thirty-four years of age, was for many years Secretary and Treasurer of the Hamilton and District Gardeners and Forestry Association, and was widely known and respected in horticultural circles in the west of Scotland. The funeral took place on Wednesday, the 20th inst.

H. Silcock.—We regret to learn of the death, on Thursday, March 21, of Mr. Herbert Silcock, for twenty-two years gardener to Mrs. Anderson, Bassett Wood, Southampton. Mr. Silcock was ill but a few days, the primary cause of death being septicoemia following a dental abscess. He was sixty-two years of age. The funeral took place on Monday, March 25, and was attended by a large number of friends. The service was fully choral, Mr. Silcock having been a member of the church choir for many years. His sudden death is deeply regretted by his colleagues and all who knew him. He was greatly loved and a great gardener, with a wonderful knowledge of trees, shrubs and rock plants. He was always willing and anxious to impart his knowledge to all who wished for it. Mr. Silcock was one of the founders of the Southampton and District Gardeners' Society, nineteen years ago, and was a regular attendant at the meetings and shows.

Alfred Tomalin.—After only a week's illness the death occurred at 28, Heath Road, Crayford—where he had resided since his retirement—of Mr. Alfred Tomalin, for over fifty years gardener and estate manager to the White family at Oakwood, Crayford, Kent. He retired from active work about six years ago, when a brief sketch of his career was published in this journal. The funeral took place on Wednesday, March 20, at Crayford Parish Church, when the large attendance and the wealth of beautiful flowers bore witness to the high esteem in which Mr. Tomalin was held by all classes of the local community and of the horticultural profession, which he adorned for so many years. Mr. Tomalin leaves a widow, four daughters and four sons, who have received very many expressions of sympathy in their sorrow.

Ludwig Wittmack.—The German horticultural press reports the death, which took place on February 2, of the celebrated botanist Ludwig Wittmack, or, as he was affectionately called in his own circle, "Old Wittmack," an appellation not unmerited, as he had reached the advanced age of eighty-nine. Wittmack was born in Hamburg, and was at first intended for a pedagogic career, for which purpose he studied at Jena and in Berlin. He early specialised, however, in botany and agriculture, especially in the subject of agricultural seeds. As a professor in the Berlin Agricultural College, and instrumental in founding the Museum attached thereto, he had plenty of opportunities of indulging his botanical tastes, and was especially interested in Bromeliads, a subject which he studied for an article in Engler-Prantl's *Naturliche Pflanzenfamilien*. Two genera were named after him—Wittmackia, which is allied to Aechmea, and Wittmackanthus, a genus of the Order Rubiaceae. He made many interesting researches into prehistoric seeds, mainly founded on grave-discoveries. He was the author of many works, of which we may mention one on grass and Clover seeds published in 1873, which was re-published in a fuller form in 1922 under the title of *Landwirtschaftliche Samenkunde*. It is greatly to his credit that amid his multifarious occupations he gave much thought and attention to the subject of encouraging home gardening, the importance of which he was one of the first to recognise, at a time when his theories met with a good deal of raillery. Needless to say, his opinions have now received full recognition, and are shared by all in authority.

ANSWERS TO CORRESPONDENTS.

Allotment Land.—*W. H. P.* Under the Allotments Act, 1922, where land is let to any local authority for the purpose of being sub-let for use as an allotment garden the tenancy can be determined by the landlord by six months' or longer notice to quit, expiring on or before April 6, or on or after September 9 in any year.

Arums (Richardias) and Cyclamens infested.—*G. W.* The Arum (Richardia) foliage is insufficient material from which to make a diagnosis of the trouble. The rhizomes may be attacked by the soft-rot bacillus. One of the Arum leaves shows signs of damage by young slugs, the trouble resembling that found on Aspidistra foliage due to these pests. Search should be made after dark to ascertain whether freshly hatched slugs are present. The Cyclamen leaves are attacked by Begonia mite. Spray both surfaces of the foliage with Nicotine soap wash, this giving the best results. The plants may be dipped in sulphur soap wash, made by kneading a handful of flowers of sulphur with a six-inch potful of soft soap and dissolving it in about two gallons of water, keeping the material stirred throughout the operation.

Boiler for Heating a Greenhouse.—*G. H. J.* The heating of a greenhouse has to be reckoned according to the length of four-inch piping, and also upon the cubic capacity of the house A high house, or one that is exposed to the wind, is more difficult to keep warm than one that is low and sheltered. The part of Britain has also to be taken into consideration, although this can be calculated by the temperature experienced locally. Your district is a mild one. For instance, if the outside is at 40°F. and you wish to keep the temperature of the house at 45°F., eighteen feet of four-inch piping would be sufficient to warm 1,000 cubic feet. If the outside temperature were at 10°, that is at 22° of frost, you would require 126 feet of four-inch piping. The correct plan of heating is to have more piping than the minimum needed to give the required heat. When frost is experienced it then becomes a question of stoking without having to drive the boiler to excess. The Horse Shoe Boiler is a very efficient one for small greenhouses, and you could ask for the booklet L, from Messrs. Charles P. Kinnell and Co., Ltd., 65, Southwark Street, London, S.E.1. Measure the length of a flow and return pipe, each of which is the length of the house, and select a boiler that is capable of easily heating that length of piping.

Calcium Chlorate and Bishop's-weed.—*K. M. F.* If the above chemical substance ($CaClO_3$) will kill Field Bindweed, it would also kill Bishop's-weed, which never penetrates the soil so deeply. The Bishop's-weed should be allowed to start growing, when it will be much more sensitive to the chemical. It should be advanced enough sometime in May or early June, and that would give the chemical time to become decomposed before planting time in autumn. The calcium chlorate will be safe to use as it is not explosive like sodium chlorate and perchloric acid ($HClO_4$). Bishop's-weed in the grass plot may be got rid of by digging a trench at the edge of the grass and digging out all the roots. That in the grass may be killed by putting a good pinch of lawn sand in the crown of each plant, and repeating it every time the weed pushes up fresh crowns. The latter could also be spudded out with an old knife repeatedly to exhaust the roots. If you could arrange to have the turf lifted, the roots could be dug out and the turf relaid. This is the quickest way to get rid of it.

Names of Fruits.—*Suffolk.* 1, Hormead Pearmain; 2, Hollandbury; 3, Reinette du Canada; and 4, Rosemary Russet.

Communications Received.—J. M.—A. T. H.—J. P.—G—E. T.—H. B. M.—A. G.

THE
Gardeners' Chronicle
No. 2206.—*SATURDAY, APRIL* 6, 1929.

CONTENTS.

Alpine garden—
  Phlox Douglasii ... 267
  Thlaspi rotundifolia 268
Campanulas, alpine ... 263
Chile and the Andes ... 262
Davidson, Mr. Alexander C. 256
Flower garden—
  Poppies, Sunbeam... 268
Fruit trees, rabbit damage to 269
Garden manures for April 268
Hevea brasiliensis, propagation of ... 255
Horticultural crops, frost damage to ... 256
Indoor plants—
  Begonia Gloire de Lorraine 260
  Bouvardias... ... 260
Ivy baskets 268
Kew, New Curator of 256
Kirstenbosch Botanic Gardens 257
Obituary—
  Cobley, Richard ... 270
Orchid notes and gleanings—
  Odontoglossum citrosmum 260
Primrose, an old garden 266
Primula, the genus ... 266
Primulas, Asiatic ... 264
Primulas, Chinese ... 257
Public parks and gardens... 269
Societies—
  Kilmarnock Spring Show 270
  Manchester and North of England Orchid 269
  Salisbury Gardeners' 270
Trees and shrubs—
  Clematises, double-flowered 261
  Philesia buxifolia ... 261
Week's work, the ... 258
Woodland garden—
  Trilliums 260

ILLUSTRATIONS.

Apple tree damaged by rabbits... 269
Chile and the Andes 262
Clematis Lucie Lemoine... 261
Davidson, Mr. Alexander C., portrait of 256
Gold-laced Polyanthus 266, 267
Leucocoryne ixioides (odorata) 263
Odontioda Velasquez 259
Primula Agleniana, 265 ; P. Forrestii 264
Rhododendron euchaites 257

Coloured Supplement Plate.
Sophora tetraptera.

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 46·0°.

Atual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, April 3. 10 a.m. Bar. 30·1 Temp. 47°. Weather, Overcast.

The Propagation of Hevea brasiliensis.

One of the many contributions that have been made by the Royal Botanic Gardens, Kew, to the economic development of the Empire was the introduction of Hevea brasiliensis into the East in the seventies of last century. The romance which attended the smuggling of seeds from the Amazon to Kew, the propagation of the tree there, and the transport of young plants to Ceylon, has often been told. But for many years thereafter Rubber planters did not recognise the need of further assistance from scientific institutions or men, and were content to propagate new stock from seeds collected at random in their plantations. The friends of the late Mr. W. Bateson will remember that, on his return from the meeting of the British Association in Australia in 1914, he strongly expressed his belief in the need for studying the "breeding" of Hevea; he was satisfied that true-breeding clones of differing yielding capacity existed, and that the average yield of plantations might be greatly increased by the application of plant-breeding methods. There may be no connection, but it is a curious fact that somewhere about 1915 the subject began to interest the Dutch research workers in Java. The first fact established was that the yield of Rubber from individual trees varies from 3 lb. to 40 lb. per annum, and that thirty per cent. of the yield of any plantation may be dependent on the yield of less than ten per cent. of the trees. It was next established that the yield of trees propagated from the seeds of a heavy yielder is sensibly higher than that of the average tree. Now Hevea brasiliensis is normally cross-fertilised, and self-fertilisation is rare and impossible to achieve practically. So that here we have the same difficulty as that upon which we recently commented in relation to the Cabbage family (p. 111), for the trees are predominantly heterozygous and do not breed true. Lately, a further advance has been made ; for if vegetative propagation of a hybrid plant can be practised, no genetic complication need arise. Experiments on the budding of Hevea have now been going on for some years, and are already giving definite results. Once the high-yielders had been identified by keeping records of the yields of individual trees it became a comparatively simple matter to multiply trees of the same character by budding, although, as might have been expected, some problems relating to the action of stock on scion still remain to be solved. Already, in Java and Sumatra, results from budded trees are so remarkable that the systematic replacement of the existing stocks in plantations by budded high-yielders is likely to become universal. The botanical puzzle—what, if any, is the survival value of latex to the species that secrete it ?—still remains unsolved, but a recent discovery seems to support the view that it is purely a waste product, playing no part in the nutrition of the tree, and generally unaffected by environmental conditions. In a paper recently read to the Rubber Research Association, a member of the staff, Mr. Herbert Ashplant, announced that he had proved there is a high correlation between the yield of Rubber, and the average diameter of the laticiferous "tubes" which carry it just below the bark ; this diameter, moreover, is a genetic characteristic of the tree, measurable even in the petioles of seedling leaves. It would seem to follow, therefore, that the secretion of latex is controlled by the storage capacity ready to receive it, rather than by any nutritive demand. Incidentally, the discovery furnishes a means of rogueing seedling nurseries, for under existing methods the value of the tree cannot be determined until the tapping age (at least three years) has been reached, whereas by Mr. Ashplant's method the high-yielders can be picked out after one year's growth. Returning to budding, it may be mentioned that an interesting monograph* on the subject was recently issued by the Rubber Research Institute of Malaya. The author, Mr. F. Summers, describes the progress already made by the Dutch and Americans in Java and Sumatra, and the lamentably late development of budding in British possessions. It is little wonder, therefore, that Mr. Ormsby-Gore, in his recently published report on a tour in the East, should devote a considerable section to proclaiming the success of the Java work. Writing of the slowness with which Rubber research has progressed in British dependencies, he makes the caustic comment : "Unfortunately, the planters, or the employers in London who control them, are not always as familiar as they might be with the scientific material for forming a considered judgment." Mr. Summers' monograph, however, shows that this reproach is no longer justifiable, and that the workers in Malaya are actively engaged in making good the ten years' leeway behind the Dutch and American workers in Java and Sumatra.

Our Coloured Supplement Plate.—The Coloured Plate, presented as a Supplement to this issue, is of the beautiful New Zealand Kowhai, Sophora tetraptera, a shrub, or, as in its native habitat, a tree of from fifteen feet to forty feet high. Belonging to the Natural Order Leguminosae, it is an extremely handsome subject, its downy, zigzagged branches being furnished with pinnate leaves up to five inches long, and bearing a profusion of racemes of beautiful Pea-shaped flowers. S. tetraptera is not so hardy as to pass through the winter unscathed in the colder parts of this country, even although afforded the protection of a wall, but for the milder districts, or for specially sheltered positions, it is a worthy claimant for a place. It thrives in a rooting medium of sandy loam and is very quick-growing in the early stages, being easily raised from seeds.

The New Curator of Kew.—Mr. T. W. Taylor, the Assistant Curator in charge of the Tropical Department, has been appointed to succeed Mr. W. J. Bean as Curator of the Royal Botanic Gardens, Kew.

Royal Horticultural Society's April Exhibitions.—As already stated in these columns (p. 236), the Daffodil Show, which was to have been held in the Society's new hall in Greycoat Street, Westminster, on April 9 and 10, has been postponed for a week. It will now be held in the old hall in Vincent Square, Westminster, on Tuesday and Wednesday, April 16 and 17. All entries must reach the Secretary not later than by the first post on Saturday, April 13, but it will be helpful if they arrive earlier. In view of the postponement of the Daffodil Show, the Society will hold an ordinary fortnightly show in the new hall in Greycoat Street, Westminster, on Tuesday and Wednesday, April 9 and 10. The Fruit and Vegetable, Floral, Orchid, Narcissus, Scientific and Library Committees will meet at the usual times on Tuesday, April 9, but as the Daffodil Show is confined to Daffodils, only the Narcissus Committee will meet on Tuesday, April 16.

Rotterdam Spring Show.—In consequence of the long period of very hard frost which occurred during February, Dutch growers have suffered very severely, their crops being much later than usual, and it has been found necessary to postpone the projected Spring Exhibition in Rotterdam to a considerably later date than was at first contemplated. The dates have now been fixed for April 24 to 28, and it is hoped that by this means the exhibition may be made a complete success, and once more demonstrate the high standard attained by the Dutch horticulturists.

Lauriston Castle, Edinburgh.—An important addition to the list of public parks in Edinburgh is to be made during the summer, when the historic Lauriston Castle will be handed over to the Edinburgh Corporation under the will of the late Mr. and Mrs. W. R. Reid.

Grant for the Development of the Potash Industry in the United States.—The Congress of the United States of America has recently authorised the appropriation of a sum not exceeding $50,000 for the fiscal year ending June 30, 1929, and a similar sum for each of the three succeeding fiscal years, the money to be expended jointly by the Departments of Agriculture and Commerce in the investigation and development of improved and cheaper methods for recovering potash from the various potash-bearing deposits in the United States.

The Playing Fields Movement.—In a letter to the Press, on behalf of the National Playing Fields Movement, Sir Arthur Crosfield (Chairman of the Council), General Lord Cavan (Chairman of the Appeal Committee), and Mr. Noel Curtis-Bennett (Hon. Treasurer), give the following facts demonstrating the results, both direct and indirect, following the appeal made by the Duke of York in June, 1927, on behalf of the movement :—(1) Five hundred-and-thirty-five acres of land, to the value of £138,000, have been given to the Association or to local authorities in response to the the appeal, and further gifts of this kind are still being received. (2) Contributions of over £164,000 have been made to the

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* "The Budding of Hevea in Modern Plantation Practice," by F. Summers ; *Rubber Research Institute of Malaya Planting Manual.*

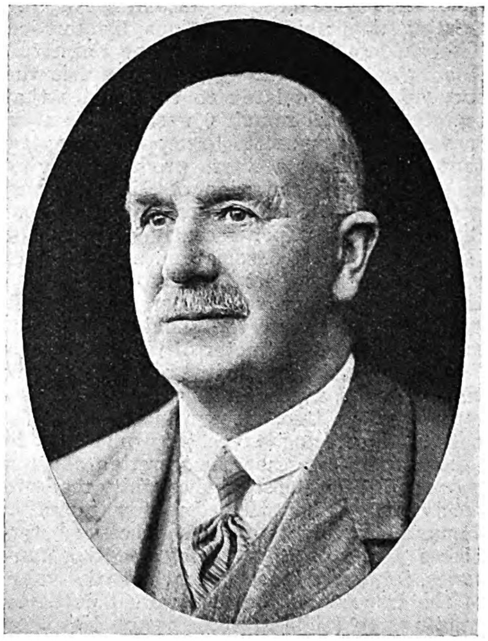
Association and its branches. (3) The Carnegie Trustees have set aside the magnificent gift of £200,000, to be used for the purchase or laying-out of recreation grounds. (4) Three-hundred-and-seven schemes for purchasing or laying-out playing fields have been initiated by local authorities or committees during the last eighteen months and referred to the Association for advice and financial support. These schemes extend to a total area of 3,806 acres, and involve an outlay of £1,130,674. "It can therefore be said," they announce, "that since the national appeal was launched, facilities for public recreation have been or are being provided at a cost of £1,632,674, apart from many important schemes carried through by local authorities without aid from the Association and the Carnegie Trustees. These results are very encouraging and show that a really satisfactory advance has been made in many districts: elsewhere, unemployment and high rates have rendered it impracticable for schemes to be undertaken for the purchase of playing fields, even where the need is most acute. The evidence of the serious shortage of recreation grounds is indeed overwhelming, and the Association can only hope to achieve its aims if it receives the continued and extended interest and financial support of the people of this country."

Land Surveying by the Romans.—The re-arrangement of the various collections in the galleries of the Science Museum at South Kensington, has resulted in the introduction of an exhibit illustrating surveying. In this, the work of the Roman land surveyors comprises a very interesting group, and includes a reconstruction of an ancient Groma, two Roman measuring rods, and a map prepared by Sir Montague Sharpe showing the boundaries laid in Middlesex by surveyors during the Roman occupation of Britain.

Tewkesbury Daffodil Show.—Owing to the lateness of the season, the Annual Show of the Tewkesbury and District Daffodil and Spring Flower Society, which was to have taken place on April 11, has been postponed to Friday, April 19. Entries close with the first post, Monday, April 15.

The Easter Holidays.—Fine weather once again favoured the British Isles for the Easter Festival, so that the millions of holiday-makers were able to enjoy to the full the respite from their labours, and although Easter Monday—as though the clerk of the weather was fearful of overstepping the bounds of generosity—was more typical of early April and not so warm and summer-like as the three preceding days, yet the weather was not sufficiently doubtful to mar outdoor pastimes. This was evidenced by the general exodus of Londoners, as well as of occupants of other big cities, to the country and seaside resorts, the many favourite spots on the outskirts of London—Epping Forest, Hampton Court, Kew, Windsor and Epsom Downs being particularly popular. And those who were unable to leave London sought consolation, and found it, in the many beautiful public parks and gardens, and were able to enjoy to the full the brave displays of early spring flowers. Likewise their "country cousins" arrived in their thousands and took possession of the museums, the Zoological Gardens, etc. And yet the aftermath of the Easter Festival was not so bright and pleasing, for still we learn of inconsequent littering of the countryside and, what is worse, the disfigurement of many acres of beautiful grassland, heathland and woodland by fire, and this despite the combined efforts of the press and local authorities in warning the public against actions which lead to damage. A lighted match or cigarette-end is presumed to have been the cause of a serious fire which occurred on Budley Common, near Edwinstone, and which at one time threatened to envelop Sherwood Forest. The sorry tale of the disfigurement of the Home Counties by fire includes:—140 acres of Witley Common, Surrey; a large fire on Epsom Common; thirty acres of woodland on the Marshalswick Estate, St. Albans; a big plantation at Nonsuch Park, Cuddington; a large area of Gorse-land on Harpenden Common; fifty acres of grass-land between Chesham, Buckinghamshire, and Lye Green; a big patch of grass-land on Wimbledon Common, and a host of others. A devastating fire broke out at Bordon, in Hampshire, on Bank Holiday evening, and raged throughout the night and the greater part of Tuesday, and before being brought under control by the troops from Bordon and Longmoor camps, laid waste to a great area of Heather and Fir trees. On Tuesday, also, extensive damage was caused by Gorse fires in Monmouthshire, while two Gorse fires of considerable extent occurred at Epping Forest.

Mr. Alexander C. Davidson.—Fifty years' service in one place is a fine record, and this record has been achieved by Mr. Alexander Craig Davidson, Superintendent of Parks for the Borough of Gateshead. This jubilee of service was celebrated on March 23, when Mr. Davidson was presented with a suitably engraved gold watch by the members of his staff, while Mrs. Davidson received a gold wristlet watch as a memento of the event. When nineteen years of age, Mr. Davidson came from Bothal, Northumberland, to become a journeyman gardener at Saltwell Park, Gateshead; at this time the staff consisted of nine persons and the park of thirty acres was very like the private garden it had been for many previous years. Five years later he became foreman, and seven years afterwards Superintendent, a post he has held for thirty-eight years to the great satisfaction of the townsfolk of Gateshead. There have been additions during Mr. Davidson's regime, including The Grove, which may be closed for band performances, concerts, etc., the charge for admission contributing handsomely towards the cost of the upkeep of the parks. Saltwell Park is finely planned, and the arrangement of bowling greens and tennis courts is evidence of Mr. Davidson's skill as an organiser, as the arrangements permit of great economy in oversight and upkeep. The Terrace, with its fine views, the summer bedding, the lake, and the Maze, are all popular features of Saltwell Park, where now the staff numbers thirty-five.



MR. ALEXANDER C. DAVIDSON.

Trees of Remembrance.—The Roads of Remembrance Committee of the Roads Beautifying Association is appealing to the public to co-operate with it in planting trees in commemoration of those who fell in the Great War, or died at other times; of any outstanding event in public or private life; of the visit of any prominent person to this country; of occasions of national rejoicing or mourning; and of births, marriages or deaths. By the kindness of the Surrey County Council, with whom the Roads Beautifying Association is collaborating in roadside planting, certain trees can be allotted on the Kingston By-Pass for Remembrance purposes, according to the wishes of the donor. Should members of the public wish to plant trees on any other road than that mentioned, if such roads are suitable for this purpose, *i.e.*, having a sufficiently wide margin at the side, the Roads Beautifying Association will approach the highway authorities concerned, and request permission for the planting of such trees. The Roads of Remembrance Committee will make arrangements for the preparation of the ground, the provision, planting and staking of such trees, together with the fixing of a permanent tablet, for the inclusive sum of two guineas per tree. A list of trees suitable for wayside planting is appended to the published appeal.

Frost Damage to Horticultural Crops.—The recently issued *Report* of the Ministry of Agriculture on the condition of horticultural crops shows widespread damage from the severe weather of February and early March. Autumn sown Beans and Peas are badly affected everywhere. Excellent Broccoli are reported from Cornwall, but elsewhere much damage was done and prospects are poor; autumn-planted Cabbages in general have suffered severely and the crops will be very late. Lettuces out-of-doors have been damaged severely generally, in some places only a small percentage of the crop having survived; Rhubarb, Seakale, and spring Onions in the open were checked, and these crops will be much later than usual.

Power Machinery for Orchard Cultivation.—The Middlesex Agricultural Education Committee, in co-operation with the Ministry of Agriculture, is organising a demonstration of power-driven implements suitable for orchard cultivation. The range of implements will be representative. The demonstration will be open to the public, and will be held, by courtesy of Mr. Whittingdon, at Perry Oak Farm, Heathrow, Hounslow, on Wednesday, the 10th, and Thursday, the 11th inst., from 11 a.m. to 4 p.m. each day. Those engaged in fruit cultivation on a commercial scale should find the demonstration of considerable interest.

Destructive Woodland Fires in Scotland.—Two very destructive woodland fires occurred in the north of Scotland during the past week-end. The famous Binn Hill, Huntly, Aberdeenshire, for generations the property of the Dukes of Richmond and Gordon until disposed of some years ago, was the scene of a violent outbreak when over three hundred acres of young trees were destroyed. The Forestry Commission has been hard at work on the hill every planting season since, and including, 1926, and fine results were being achieved. The damage is estimated at over £2,000. How the fire originated has not yet been determined. The second outbreak was on the estate of Edderton, near Tain, Ross and Cromarty. Getting out of control, and aided by a strong wind, the fire assumed alarming proportions, and quickly spread to the adjoining estates of Rosehill, Quarry Hill, Ardlarach and Tarlogie, where there are considerable acreages under young trees. Colonel Ritchie of Ardlarach was quickly on the scene and organised a vigorous campaign to prevent the fire spreading. The result was eminently successful, many young plantations and the fine avenue leading to Ardlarach House being saved. Nevertheless, much serious damage was done, especially on the estates of Rosehill and Ardlarach. The conflagration was brought about by Heather burning, by which so many serious fires have their origin.

Hélène Costantin and her Art.—Accompanying a kindly letter, Professor Georges Jamin (Professor Hon. de l'Ecole Lavoisier, Paris), sends the following note:—"In one of the chapters of the *Forsyte Saga*, Galsworthy depicts for us a water-colour artist who seeks his inspiration in the Botanical Gardens. One day, when I was admiring, at the Salon de l'Eclectique, in Paris, the Oaks, Pines and Beeches painted by Mdlle. Hélène Costantin, I thought of the young Jolyon Forsyte. Like him, indeed, Hélène Costantin has acquired a taste for nature in the midst of the trees of the town. Her father is the well-known Professor of Botany at the Natural History Museum. For seventeen years she lived at the Jardin des Plantes, in Paris, and there formed her taste for the arts, and was enthused with a desire to reproduce the forms of those plants and trees whose mysterious life and the artistic and moral lessons they teach, had been explained to her by her father. But Hélène Costantin does not transmit her impressions by water-colours or in oil; she uses wool and canvas, and the decorative effect of her tapestry is quite striking. Those who have seen her landscapes of Brittany or the Ile de France, at the Salon des Artistes Français and the Salon d'Automne, cannot have failed to admire them. The art critic who did not mention so original and personal a method would be false to his duty, which undoubtedly is to bring to public notice those artists who, avoiding the beaten path, display to us a fresh aspect of nature, always infinite in variety and eternal in beauty."

Export of British Potatos to Germany.—The Ministry of Agriculture announces that arrangements have now been made, through the Foreign Office, under which Potatos of United Kingdom origin gathered before December 1 last may be imported into Germany on payment of the reduced duty of one Reichmark per one hundred kilogs. The condition attached to this arrangement is that a statement to the effect that the Potatos were gathered before December 1 last must be endorsed on the certificate issued by officers of the appropriate Departments of Agriculture to meet the requirements of the German regulations regarding the prevention of the introduction of Potato blight. The statements should be in both German and English.

Kirstenbosch Botanic Gardens.—The National Botanic Gardens at Kirstenbosch, near Cape Town, were established in 1913, and form part of the Groote Schuur Estate bequeathed to the South African nation by Cecil Rhodes. In 1922, a further site, known as the Upper Kirstenbosch Nature Reserve, Table Mountain, was placed under the control of the Botanic Garden authorities, for the better protection of the native vegetation. The latest *Report*, issued at the end of 1928, states that steady progress in the establishment of the various plant collections has been made, and an average of about nine contributions of seeds and plants reaches the Gardens daily. An important piece of recent development is a new Succulent Garden, the need for which has been acute ever since the early days of the Gardens. The provision of a Succulent house has made it possible to accommodate the smaller Succulents—Lithops, Conophytum, Anacampseros, etc.—while the garden will form a permanent home for the larger species. The site was chosen in 1922, but lack of funds made further progress impossible until 1927. A special expedition for the collection of material was made to the South West African Protectorate in August-September, 1927, and resulted in large collections of valuable material. The Kirstenbosch Botanic Gardens are open to the public during daylight every day of the year, without charge for admission, and many thousands of visitors take advantage of this privilege.

Haarlem Daffodil Show Postponed.—Owing to the lateness of the season the Daffodil show arranged to be held by the General Dutch Bulb Growers' Society, at Haarlem (Holland), has been postponed to April 25 and 26. Intending exhibitors must give notice to the Secretary, Mr. H. J. Voors, Krelagehuis, Haarlem, not later than April 18.

Chinese Primulas.—On March 26, on the invitation of the Council of the Royal Horticultural Society, Professor W. Wright Smith, Director of the Royal Botanic Garden, Edinburgh, delivered a lecture on "Chinese Primulas" before the Fellows of the Society, in the lecture room of the new hall. The lecture was based on the revision of the genus Primula by Professor Smith and Mr. George Forrest which was prepared for the R.H.S. Primula Conference at Chelsea last year, and was reprinted in the recently issued volume of the R.H.S. *Journal.* The lecture was illustrated by a series of lantern slides of Primroses, prepared from photographs of species in the field, taken by Mr. Forrest and Dr. Handel-Mazzetti, or of plants growing at the Edinburgh Botanic Garden or at Wisley. One or two coloured slides of Primroses growing on the mountains of western China were of unusual interest to cultivators of exotic Primroses, and the whole series was illustrative of the perfection to which plant photography can be brought. The slides were thrown on the screen with excellent effect by a new lantern which, it is understood, was on trial for the occasion. It was in welcome contrast to the old lantern with which both Fellows and those who have been invited to lecture in the old hall are all too familiar.

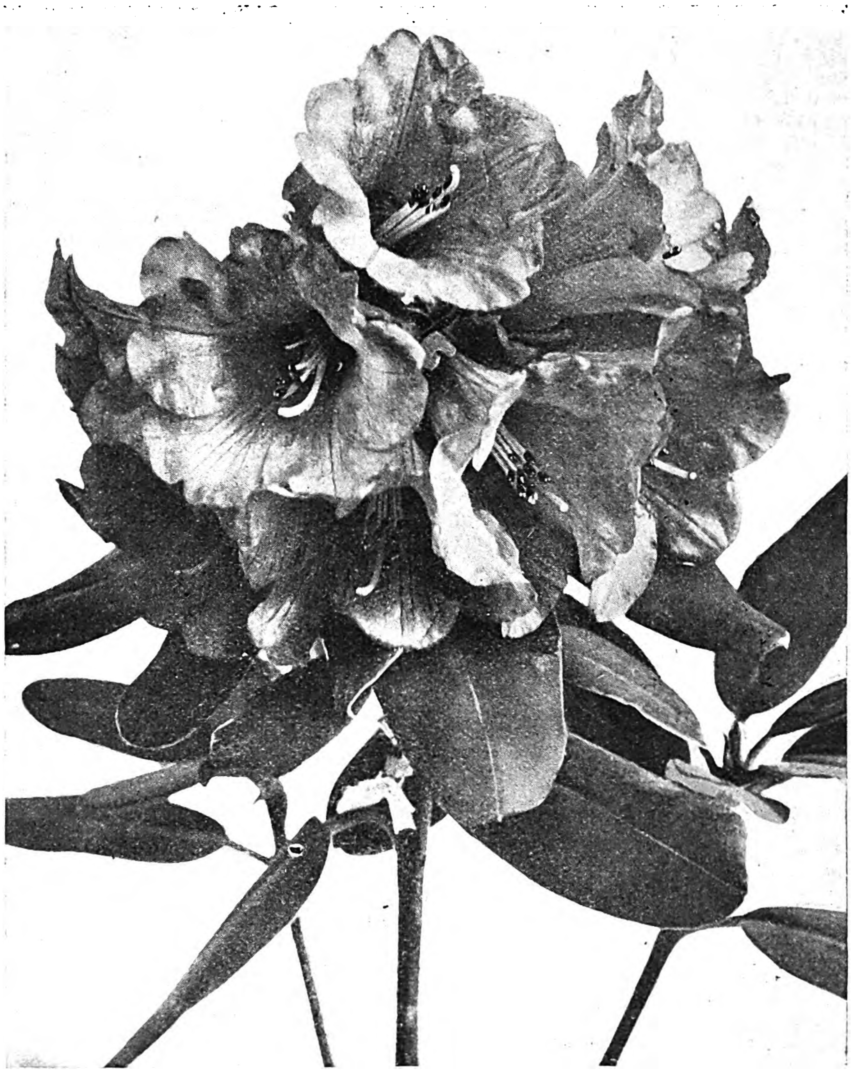


FIG. 130.—RHODODENDRON EUCHAITES.

R.H.S. Award of Merit, March 26. Corolla and calyx red. Shown by Lady Aberconway and the Hon. H. D. McLaren (gr. Mr. F. C. Puddle), Bodnant (see p. 252).

Appointments for the Ensuing Week.—Monday, April 8: Harrogate and District Horticultural Association's meeting. Tuesday, April 9: Royal Horticultural Society's Committees meet; two days; in the new hall (see p. 255); Jersey Gardeners' Society's meeting. Wednesday, April 10: Brighton, Hove and Sussex Horticultural Society's Show (two days); Falmouth Spring Flower Show (two days); Sheffield Chrysanthemum Society's lecture; Brussels Commercial and International Fair (fourteen days April 10 to 24). Friday, April 12: Faversham Chrysanthemum Society's meeting; Royal Horticultural and Arboricultural Society of Ireland's meeting; Huntingdonshire Daffodil Society's exhibition.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Rhododendron Dalhousianum.*—At the meeting of the Horticultural Society held on April 4, the Right Hon. Lawrence Sulivan in the Chair, by far the most novel and striking object exhibited on this occasion was a flowering specimen of Rhododendron Dalhousianum, from Mr. Packman, gr. to J. Gadesden, Esq., of Ewell, to whom belongs the honour of having been the first to flower this plant in England. The only other place in which it has yet blossomed in Britain is Dysart House, in Fifeshire, where it produced flowers last year, under the care of Mr. Laing, gr. to the Earl of Rosslyn. Mr. Gadesden's plant had had five blooms on it; but two of them had dropped, leaving, of course, only three behind, each of which measured about 4½ inches in diameter, and as much in length. They somewhat resembled the flowers of the white Lily (L. candidum), except that they were tinged in the throat with yellow. Notwithstanding their great size, they were not at all flimsy in texture; on the contrary, the petals were thick, and the flowers extremely well-formed. When it is considered that a single stem, some 18 inches in height, produced five flowers, the display that may be expected to be made by a large specimen, covered with blossoms of the dimensions stated, must be grand indeed; and, therefore, whether this Rhododendron prove hardy or not, it must certainly be regarded as a great acquisition. A Knightian Medal was awarded it.—*Gard. Chron. April* 8, 1854.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

The Cool House.—Many plants in this house are now developing flower spikes, notably Odontoglossums in variety, together with the bigeneric hybrids, Odontiodas, Oncidiodas, and others, and these form a remarkably free-flowering group of cool house Orchids, their graceful spikes of beautifully coloured flowers being very decorative, either on the plant or when cut. Where large quantities are grown, some plants may be had in flower practically the whole year round. If slugs are troublesome, stand the plants now developing spikes over water, or wrap cotton-wool around the base of the spike; this should be renewed frequently. Lettuce leaves and small quantities of bran should be placed about the staging as traps, and should be examined at night, when the slugs are usually feeding. The young flower spike should be secured loosely to a neat stake in the early stages to enable the flowers to be displayed in a graceful manner. At this stage of growth ample supplies of water will be required at the roots each time the compost appears dry. Measures should be taken to keep thrips in check; these are often found around the buds, therefore, when the plants are sprayed with an approved insecticide at fortnightly intervals, the flower spikes should be sprayed thoroughly too, until the buds are about to expand. Plants that flowered during the autumn and early winter months, and now require repotting, may be attended to. The best stage at which Odontoglossums and allied kinds may be repotted is when the young growths are well advanced and just beginning to swell, as more new roots are generally produced then than in the early stage. Use well-drained pots and a soft, open compost of equal parts of Osmunda and soft A.1. fibre, and one part Sphagnum-moss; a little extra moss may be used for finishing off the surface. When repotting, decayed pseudo-bulbs and roots should be cut away; retain three pseudo-bulbs to each lead. Some varieties are susceptible to rhizome rot, and if this is detected all affected portions should be cut away and destroyed, the sound piece being allowed to dry before being potted up; it is advisable to dust any severed part of the rhizome with powdered charcoal. Over-potting should be avoided, and the base of the plant should be kept level with the pot rim, and just in contact with the compost, which should be pressed firmly among the roots, but should not be built up around the pseudo-bulbs or young growths.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Raspberries and Loganberries.—These suffered during the recent severe weather, but not badly. Shorten any canes that the frost may have injured to a plump bud, and see that all the ties are secure. Where a new plantation has been made the canes should be cut down almost to the soil level. Give a further firming of the ground about them by treading, but take care not to damage the young basal growths which are now appearing. Raspberries thrive best when afforded a deep, cool and moist root run. The plants will therefore benefit greatly by a good mulching of half-decayed manure applied now and spread evenly on both sides of the rows to the outward extent of about eighteen inches. Neglect in this matter may result in the fruits becoming hard and undersized in the event of a dry spell of weather during the ripening season. Where it is desired to increase a particular Raspberry stock, preserve all the young suckers that appear just now, and when they attain the height of six inches or so, carefully lift them with a trowel and plant them eighteen inches apart in permanent rows. By following out this method, a whole year is saved. The young plants become established immediately.

Big Bud Mite of Black Currants.—The tar-distillate wash applied in February should now be followed by a lime-sulphur spray at a strength of one in twelve, for the destruction of the migrating mites. The most effective period for this application is when, on healthy growths, the flower trusses appear outside the buds, but the flowers have not actually opened. The aim should be to defer the operation until the last moment, and where possible to treat each variety according to its period of flowering; by that, I mean to take the condition of the flower racemes as an indication of the proper time. Black Currant varieties vary, like other plants, in their time of coming into leaf and flower. Thus, the variety Baldwin is very early, and Goliath late, in coming into bloom. It is obvious then that we would not obtain the best results if these two varieties were sprayed on the same date. Slight scorching of the young leaves is almost certain, but the bushes seem to suffer no ultimate damage. The weather at the time of applying these sprays is an important factor towards success or otherwise in obtaining a control. I do not know of any statistics with regard to rain following on spraying, but, if the spray has had time to dry on the bushes, only very heavy rains will appreciably reduce the spray's effectiveness.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Early Peaches.—The earliest Peaches and Nectarines will now be stoning, if they have not already passed this trying ordeal, and the fruits, to outward appearances, will be making little progress. It is impossible to state how many Peaches a pot tree will ripen to full average size, but of two evils it is better to crop the trees moderately, if fine fruits and good wood are to be secured, rather than to handicap the trees by endeavouring to overcrop them. Disbudding and thinning should now be almost completed, but care should be taken that the shoots do not crowd each other. Vigorous trees will require constant attention to pinching of shoots and laterals, commencing at the top of the tree and working downwards gradually, the first factor being the maintenance of perfect pyramids and bushes well set with triple buds for another year. Heavily cropped trees will not require this incessant attention, for medium growths on such trees will not make more than two wood buds; to strengthen these, any growth inclined to take an undue share of the sap must be pinched when about ten inches in length, and any subsequent laterals and sub-laterals at the first or second leaf. Top-dressings should be applied as often as the roots appear on the surface until the Peaches are nearly ripe. Whatever is used should be given little and often, and an abundance of water should be afforded, as dryness at the roots is fatal to all fruit trees. Pure, soft water is best for syringing them, as it does not leave a deposit on the fruits. Occasional applications of soot-water are also beneficial. The temperature, after the fruits have stoned, may be raised to 60° or 63° at night and 70° to 75° by day, allowing a rise to 80° through sun-heat after closing.

Peaches in Cold Houses.—These are later than usual. All watering or damping down should be done in the morning, but the less water applied the better, as flowering trees in a dry atmosphere will withstand frosts better than if the atmosphere is moist. Any weak trees may have the badly placed and weakest flower buds removed, with the result that those left will be strengthened. Trees in unheated houses should have abundance of air throughout the day, and also at night, when freedom from frost is certain. Disbudding of crowded shoots should not be delayed long enough to rob the shoots intended to remain. When the days lengthen and the nights become milder, the syringe should be brought into greater use. Thinning should begin early on healthy trees that are well nourished at the roots, as these seldom cast their fruits at stoning time.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Pruning Roses.—In the south of England, the end of March is a suitable time to commence the pruning of Roses, but so much depends on the season that no definite date can be fixed for this annual operation; it is better to err on the safe side and be a week later, than run the risk of the tender young growths being damaged by late spring frosts, which tends to weaken the plants and make them more susceptible to attacks of aphis, mildew, etc. The laying down of hard and fast rules for pruning Roses is well nigh impossible; many growers seem to think that all growths of Rose bushes must be cut back to three or four buds. This, of course, is wrong; the plants ought to be treated according to the section to which they belong, with due regard to whether they are weak or strong growers. Those having Pernetiana blood, and the majority of the Teas, give the best results if only pruned lightly. The removal of weak and worn-out growths is all that is required if sufficient space is available for their development. Under such treatment these Roses flower more freely and continue in bloom longer than when cut hard back in the usual way. Such a method does not appeal to those who must have all their plants about the same size and shape, but will give pleasure and joy to the Rose lover. Begin by pruning the hardiest varieties, such as the Hybrid Perpetual and Hybrid Tea sorts, leaving the more tender Teas until the last. Remove all weak shoots to commence with, pruning the remainder back to the number of eyes required; cut obliquely just above a bud pointing outwards, unless the variety being dealt with is of a sprawling habit, then prune to a bud pointing inward, to encourage the formation of a shapely bush. Vigorous-growing kinds, such as Hugh Dickson and Frau Karl Druschki, give the best results if the long growths are pegged down instead of being cut back. Single Roses should be pruned sparingly, removing only the weak growths and allowing the others to remain at full length.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Begonia Gloire de Lorraine.—Plants of this Begonia that were cut down, as advised previously, should by now have developed good strong basal shoots, which undoubtedly give the best results as cuttings; and if these are not sufficiently advanced it will be wise to allow them to grow longer rather than to use weak top-growths as cuttings. This Begonia may also be increased by means of leaf-cuttings, but if suitable cuttings are forthcoming I see no need to trouble about raising plants by these means. The cuttings, when available, should be severed with a sharp knife and inserted several together in a small pot containing a mixture of loam, leaf-mould and a little peat, with sufficient sand and broken charcoal added to keep the compost open. The cuttings should be stood in a propagating frame on a mild bed of leaves, and a temperature of from 65° to 70° maintained. If eelworm has been troublesome it will be wise to sterilise the soil. Begonia mite must be kept in check by spraying with a Nicotine wash or, in the early stages, by the use of the sulphur vapouriser.

Winter Pelargoniums.—Cuttings of Zonal Pelargoniums for winter-flowering should be obtained with as little delay as possible. These may be inserted singly in small pots or several may be placed around the sides of a larger receptacle. The cuttings should be inserted and made firm, and the pots placed on a shelf in gentle warmth, but free from excessive moisture. Failing this, they should be placed in the warmest part of the house and kept somewhat on the dry side until roots are formed. To obtain good specimens the plants will need pinching several times during the summer; for forming extra large specimens, some of the old plants should be retained, cut back, and encouraged to break into growth, after which they should be potted on into larger receptacles. During the summer, keep all flower-buds removed and the growths pinched back to ensure bushy growth.

Winter-flowering Begonias.—Begonias of the Mrs. Heal, Optima and Exquisite type should now be encouraged to produce good, strong shoots for propagating purposes. These Begonias have passed through the winter splendidly, no doubt owing to the drier atmosphere and fewer fogs experienced than usual. The old stools may now be removed from their receptacles and, after carefully reducing the ball of soil, should be repotted into smaller pots, using a rich, open compost. After potting, careful watering is needed until growth is active again. Syringe frequently between the pots, but I do not recommend spraying the plants overhead at any time. These Begonias are often troubled with mite and rust during their growing season, but these may be kept in check by occasionally fumigating the house with sulphur vapour. Mite alone can be kept in check by spraying with a Nicotine wash. It is advisable to fumigate the plants as advised immediately they show signs of active growth, especially where mite was troublesome last year. This group of Begonias will repay extra care in cultivation, for they are delightful subjects for flowering during the dull months of the year.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder,
Knowle Gardens, Dunster, Somerset.

Celery.—Trenches may now be prepared for the early plants, choosing a time when the ground is not too dry for making them. Single or double, or even four lines, of Celery may be grown in a trench, the bottom of which should be deeply forked and well enriched with decayed farmyard manure.

Maize.—Seeds of Maize may now be sown in four-inch pots, one seed in a pot, and germinated in moderate heat. The seedlings should be hardened off gradually in a cool frame, after which, when the likelihood of frost is past, they should be planted out in ground which receives plenty of sunshine, and which has been well enriched with manure.

French Beans.—To provide a succession, another batch of French Bean seeds may be sown in frames. Sutton's Pioneer is equally valuable for frame or pot culture, or for growing in the open; it is first-rate in quality, a good cropper, and quick-growing.

Hoeing.—When the various seedlings are through the ground, no time should be lost in loosening the soil between the rows with the Dutch hoe. This will hasten their growth and also keep weeds in check. The use of the Dutch hoe is a great factor in securing strong, healthy plants, and it should be employed with unfailing regularity.

Seakale.—The thongs that were prepared as cuttings when the Seakale crowns were lifted, and which have been kept in ashes, may now be planted in ground that has been deeply dug and well manured. Plant them ten inches apart in rows twenty inches apart; when planted, the tops of the thongs should be just beneath the surface of the soil.

Leeks.—If Leeks are still in the ground they should be lifted and laid in a trench in a shaded position. This will retard their growth and make them last longer, whereas, if left in the bed, they will soon run to seed.

Seed Sowing.—Continue to sow batches of Peas, Radish, Mustard and Cress, Spinach, Turnip and Lettuce for succession.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq.,
Rosemount, Monkton, Ayrshire.

Broccoli.—Where this crop has wintered successfully it should be assisted by surface cultivation and a dressing of sulphate of ammonia.

Asparagus.—The established Asparagus beds may now receive attention. The manure used as a mulch may be "pointed" into the surface soil between the plants, together with a liberal dressing of coarse sand and burnt earth if the soil is of a heavy nature; a digging fork is best for this operation if the roots or crowns are near the surface. The alleys between the beds should receive the same treatment. A good dressing of salt is of great benefit to this crop, and when growth is a little further advanced, a few very light dressings of sulphate of ammonia at intervals of ten days or so will hasten the production of the crop. Where difficulty is experienced in growing this valuable vegetable, do not give up hope until sowing the seeds in the permanent beds has been tried. Prepare the ground as for planting by working it very deeply and incorporating plenty of manure. On such a prepared site the seeds may be sown now, in rows eighteen inches apart. The beds should each consist of three rows, an alley about three-and-a-half feet wide being left between each. When the seedlings appear, thin them gradually until they are at least twelve inches apart, and encourage growth by surface cultivation with the Dutch hoe. Support the growths with small twigs during the first year, after which the procedure is as for established beds, but cutting should not commence until the third year.

Early Potatos.—A rather larger batch of tubers of early Potatos should be planted in the most favourable position possible. If the soil is of a retentive nature do not plant them too deeply, and allow a few inches more between the rows to allow soil for earthing up. If well sprouted, the sets should be laid on their sides to avoid breaking the growths and also to delay their appearing through the ground, so that they will not be damaged by late frosts.

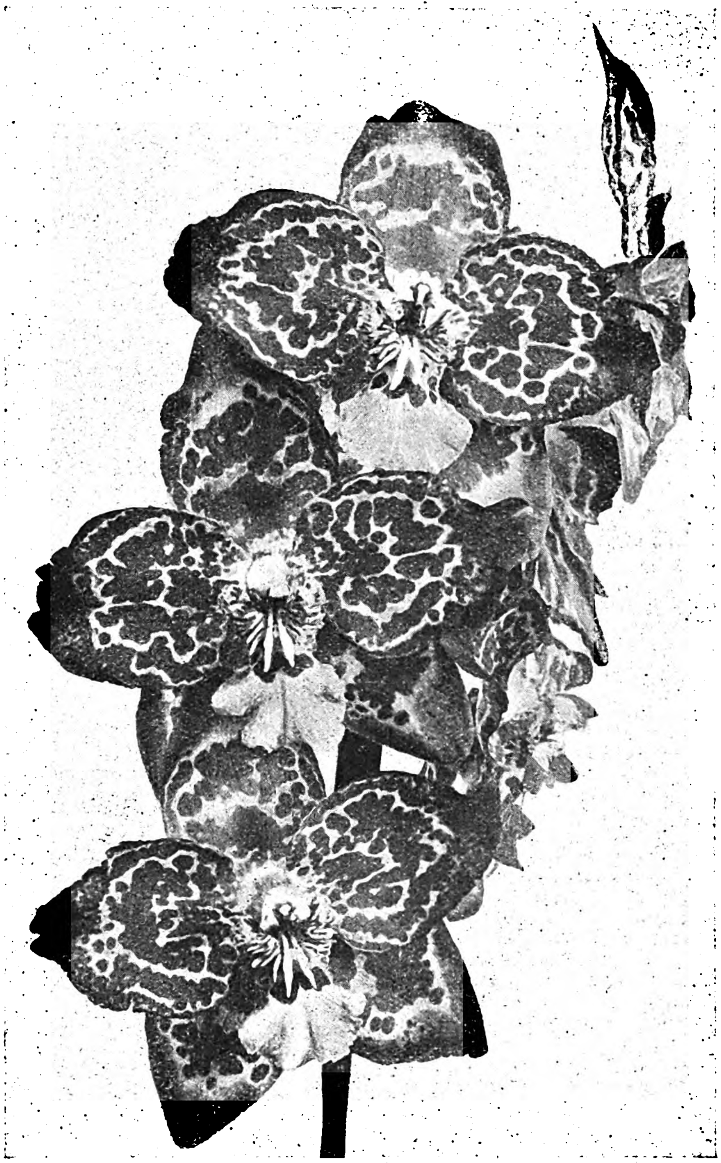


FIG. 131.—ODONTIODA VELASQUEZ.
R.H.S. Award of Merit, March 26. Flowers cream, purple and red.
Shown by G. Mayer, Esq. (gr. Mr. R. Cottam), Wistlers Wood, Woldingham.

Cabbages.—Plants from early-sown seeds, which have been brought on under glass, may now be planted out if well hardened off. These will be in great demand this year, as many of the autumn-planted Cabbages have perished.

Herbaceous Borders.—These should now receive attention. If any of the occupants are overgrown, cut out the centre of the clump with a spade and fill the hole with fresh soil. Give the surface of the border a dressing of old manure, or vegetable or leaf-mould, and point this into the surface, going deeper where space permits, so that vacant spaces may be prepared for planting.

INDOOR PLANTS.

BOUVARDIAS.

BOUVARDIAS are among our most useful decorative cool-house plants, and when well grown make a most useful addition to the conservatory or flowering plant house during the dull winter months.

Propagation is effected from cuttings taken from the old plants in the spring. These should be inserted around the edges of sixty-sized pots containing a compost of loamy leaf-soil, and sharp silver sand, the whole being passed through a half-inch-mesh sieve. After the cuttings have been inserted, place them under a bell-glass, or in a propagating case, keeping them moist and well shaded from bright sunshine until well rooted, when they may be potted singly into three-inch pots, using a compost of good fibrous loam, leaf-soil and sand, to which may be added a small quantity of good peat. After potting, place them in a temperature of from 70° to 80° until well established. It is most essential at this stage to stop the young plants to induce them to break well, and as they continue to make fresh breaks, keep the growths pinched back until a well-balanced plant is produced. Bouvardias should be syringed twice daily at this stage, and afforded plenty of fresh air on all favourable occasions, taking care to avoid cold draughts. When well established in these pots they should be potted on into six- or eight-inch pots, in which they may be flowered. Use a compost similar to that employed at the early stage, but of a somewhat coarser nature, with the addition of a little bone-meal. By the end of July, gradually harden them off prior to putting them out in cold frames in which to ripen their growths. If a frame is not available, they may either be plunged out-of-doors, or stood on a bed of moist ashes, and there treated practically in the same way as Chrysanthemums.

During the periods of active growth Bouvardias should on no account suffer through lack of water, or dropping of their foliage will result, while occasional applications of weak liquid manure should prove very beneficial. They may remain in the summer quarters until September, after which they should be removed to a warm greenhouse in which to flower. After flowering, gradually withhold water, giving the plants a slight rest, following which they should be pruned and afforded more heat, to induce them to break and produce a supply of cuttings.

Bouvardias are subject to attacks of red spider and green fly; the former may be kept in check by regular syringings with tepid water, and the latter by fumigation. Mealy bug will sometimes put in an appearance, and this may be dealt with by sponging with a reliable insecticide, or by frequent applications of methylated spirit to the affected parts, using a camel-hair brush.

Many varieties of Bouvardias have fragrant flowers, and are very useful for buttonholes, bouquets and table decoration. A few of the best varieties are President Garfield, Bridesmaid, Dazzler, Alfred Neuner, Humboldtii, corymbiflora and jasminiflora var. odorata. *E. Baker.*

BEGONIA GLOIRE DE LORRAINE.

THERE is quite a large number of winter-flowering Begonias of considerable merit for colour display in glasshouses during the dull days of autumn and winter, but probably none is more popular, and few more useful than this herbaceous, annual-stemmed hybrid raised by Lemoine from a cross between B. Dregei and B. socotrana. Although the habit of the plant is to produce short, slender, drooping stems, these may be so multiplied by a good system of cultivation that extraordinarily fine specimens are produced. Each slender stem gives rise in the autumn to a graceful, terminal raceme of bright, rose-coloured flowers which persist for a long time and develop in slow succession, giving a period of display covering three or four months. Specimens fully three feet in height and as much through may be produced in a season, and these form objects of great beauty, but smaller specimens from later-struck cuttings are equally useful, flower with the same freedom, and make ideal material for room and table decoration.

At this season of the year the earlier-flowering plants will be past their best and, with a view to getting a stock of good cuttings for next winter's display, a few of the best plants should be cut down and placed in an intermediate house to induce them to make strong basal growths. The production of good bushy plants depends a great deal on the selection of cuttings, and only basal cuttings should be taken; stem cuttings never break satisfactorily, and do not produce such good plants. If there is any difficulty in obtaining basal cuttings, propagation may be effected from leaves, and some growers maintain that better plants are obtained from this method of propagation. Well matured leaves with a small portion of stem attached root readily if inserted in boxes of sand or fibre in a propagating case with a bottom heat of 75° or 80°. The after treatment in either case is the same. So soon as the cuttings have formed roots they should be potted singly into small pots, using a mixture of loam, clean Oak leaf-soil and sharp sand. They should be grown in a house with a temperature of about 60°, and kept so near the roof-glass as practicable, to induce sturdy growth. Where large specimens are required, the plants should be potted on as required into four- or five-inch pots, and finally into six- or seven-inch pots, using a rather stronger compost made up of three parts fibrous loam to one part good leaf-soil, with a liberal sprinkling of sharp sand and a five-inch potful of bone-meal per bushel of the mixture. Good drainage is essential and the soil should be made moderately firm, but not rammed hard. During the summer little fire-heat will be needed, but the plants should be grown on in a fairly warm and slightly moist greenhouse and shaded from strong sunlight. During hot, dry weather, frequent overhead syringings may be practised with beneficial results; great care should be taken that the plants never become dry at the roots, but excessive watering should also be avoided. Little or no pinching is necessary, for well chosen cuttings produce plants which branch naturally and produce bushy specimens. All premature flowers, however, should be picked off until a few weeks before the time that the plants are needed for decorative purposes. So soon as the flowering pots are filled with roots weak solutions of soot-water, alternating with liquid manure, may be given with advantage once or twice a week.

Two pests sometimes attack the plants, red spider and aphis. The former may be kept in check by syringing and the avoidance of arid atmospheric conditions, and the latter by periodical fumigation. *W. A.*

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM CITROSMUM.

FAILURE to flower this very beautiful and easily-grown Mexican species is frequently caused by too much water being afforded at the roots during the winter and early spring months. This plant requires to be grown in a slightly higher temperature than is suitable for the majority of Odontoglossums, while the dry conditions required during the winter months do not adversely affect it as with others of the same genus. It relishes a light position, fairly close to the glass, at the cool end of the intermediate house. Plants that have been kept on the dry side during the winter are now commencing to grow, and the pseudo-bulbs may shrivel a little; this should cause no alarm and water should not be afforded to the roots in large quantities until the flower spikes are seen in the young growths, when ample supplies may be given each time the compost becomes dry. The spikes grow rapidly at this stage and as the attractive and sweetly-scented flowers expand, the pseudo-bulbs soon regain a plump condition.

Annual disturbance of the roots is not advisable or necessary, but any plants that require repotting may be attended to after the flowers are removed, using well-drained, deep pans and a compost of three parts coarse A.1. fibre and one part chopped Sphagnum-moss, adding some broken charcoal to ensure porosity. Firm potting is required and careful watering needed, as with other newly-potted Orchids. When well-established and the new pseudo-bulbs are beginning to swell, copious supplies of water may be given each time the compost appears dry, and at this stage the plants should not be shaded heavily from sunlight, while a good circulation of air is required to assist the ripening of the growths. When this is complete, very little water is required, and then only at long intervals throughout the late autumn and winter months. *W. G.*

WOODLAND GARDEN.

TRILLIUMS.

THE Trilliums comprise a group of woodland plants, mostly natives of North America, several of which are exceedingly beautiful garden subjects and among our most treasured spring flowers. They are quite hardy and easily-grown, but thrive best in moist, shady positions, and should be given a position sheltered from cold winds, which are apt to destroy the pristine beauty of their flowers. Members of the Natural Order Liliaceae, all the parts of the plant are in threes, which gives rise to the generic name of the plant. The characteristic three leaves in a whorl is typical of the genus, and they are borne on stems varying from a few inches to nearly two feet in height. The solitary flower is either sessile at the junction of the leaf petioles, or rises from this point on a slender pedicel.

T. grandiflorum is probably the best known of the genus, and is one of the most desirable hardy plants grown. Anyone who has seen a colony of this handsome species with the attractive pale green leaves surmounted by a beautiful white flower some four inches in diameter, nodding as if in obeisance to spring, will not readily forget the charm of the scene. It is an ideal plant for massing in woodland glades, and where the soil is moist and rich in humus it grows with remarkable vigour and increases from year to year. Of the numerous forms of this species the variety roseum is very distinct and a pleasing variation from the type, the flowers opening a delicate pink and deepening to a rose tint with age.

T. stylosum is another vigorous-growing species which thrives under the same conditions as T. grandiflorum. The flowers are somewhat smaller and of a rosy-pink colour, and its season of display is later, often extending into June. T. sessile is also a robust-growing species, and although not so attractive in point of beauty as the afore-mentioned, it has the charm of delicious fragrance. The flowers are quite sessile in the axils of the leaves, which gives the plant a rather stiff appearance. T. s. var. californicum is of more graceful habit and a better garden plant. It bears variable, creamy-white flowers, which are slightly claret-tinted at the base and, like those of the type, fragrant.

T. erectum has dark green, spreading foliage and rather showy flowers of a reddish-purple colour. There is also a form of this species with nearly white flowers, the petals, however, being tinted with red at the base.

Another species of merit is T. cernuum, producing pretty, nodding, white flowers on stems from a foot to eighteen inches high which often grow two or three together.

Three dwarf-growing species may be mentioned which prefer somewhat drier positions and make charming little plants for selected nooks in the rock garden, namely, T. undulatum, with spotted, ovate leaves and showy, white flowers, the perianth segments being heavily spotted with crimson at the base; T. ovatum, a dwarf plant, the three leaf segments forming a complete circle around the stem, from the centre of which the almost sessile flowers appear, pure white at first but developing a reddish tint with age; and T. nivale, a miniature species and one of the first to bloom, its pure white flowers appearing on tiny stems in April. *A. W.*

TREES AND SHRUBS.

DOUBLE-FLOWERED CLEMATISES.

THE named varieties of the florists' Clematises are mostly grouped in sections, according to the species used in their creation by the hybridists. The Jackmanni forms owe their origin to a cross between C. Hendersonii and C. lanuginosa, raised in the nursery of Messrs. George Jackman and Son, of Woking, in 1860.

Most of the double-flowered varieties have originated from C. florida, a native of China, and probably of Japan also. Thunberg was the first to introduce C. florida to our gardens in 1776. This, as with numerous other of Thunberg's introductions, was the progeny of plants cultivated for many decades in Japanese gardens.

The plant with double flowers introduced by Robert Fortune from Japan, and figured in *The Gardeners' Chronicle* for 1863, p. 676, as Clematis Fortunei, is now regarded as a cultivated variety of C. florida.

Considering their highly decorative character and beauty, it is rather surprising that the hybridist has not paid more attention to the raising of double-flowered varieties. As a matter of fact, Clematises with double flowers were more in evidence in bygone years, when specimens cultivated in large pots, and trained on a balloon-shaped wire framework, were a feature at horticultural exhibitions.

It must be admitted that the double-flowered varieties of the Florida section are not, perhaps, quite so hardy and free-growing as the single-flowered varieties of the C. lanuginosa group. The ardent and skilled plant cultivator is not usually discouraged by such problems, especially as in this case we have the longer lasting quality of the double flowers.

When selecting stations for planting double-flowered Clematises, choose the more sheltered positions, such as a wall or fence with a western aspect, and the side of an arbour or trellis screened from the east and the mid-day sun.

Cultivated in pots for the decoration of the cool and unheated greenhouses, or planted out as climbers in the borders of the cold greenhouse, they are of the greatest value.

The large-flowered, double Clematises produce their flowers from the old wood during June and July in the open air. Under glass, the flowering season is obviously earlier, according to the temperature of the house and when the pot plants are brought into the greenhouse from outside. Although grown under glass for several months of the year, the best results are usually obtained when the plants, after flowering, are placed in a sheltered place outside to ripen the new growths of the season.

The double-flowered Clematises require very little pruning, beyond the removal of old flowers and weak wood at the end of the flowering season. In February, take off two or three inches of the thin ends of the shoots, cutting them back to a healthy bud.

A selection of the best double-flowered varieties should include Beauty of Worcester, bluish-violet, with white stamens, producing both double and single blooms; Belle of Woking, silvery-grey; Countess of Lovelace, bluish-lilac; Duchess of Edinburgh, large, pure white, with a delicious perfume; and Lucie Lemoine (Fig. 132) the best double white for outdoor cultivation. *A. Osborn.*

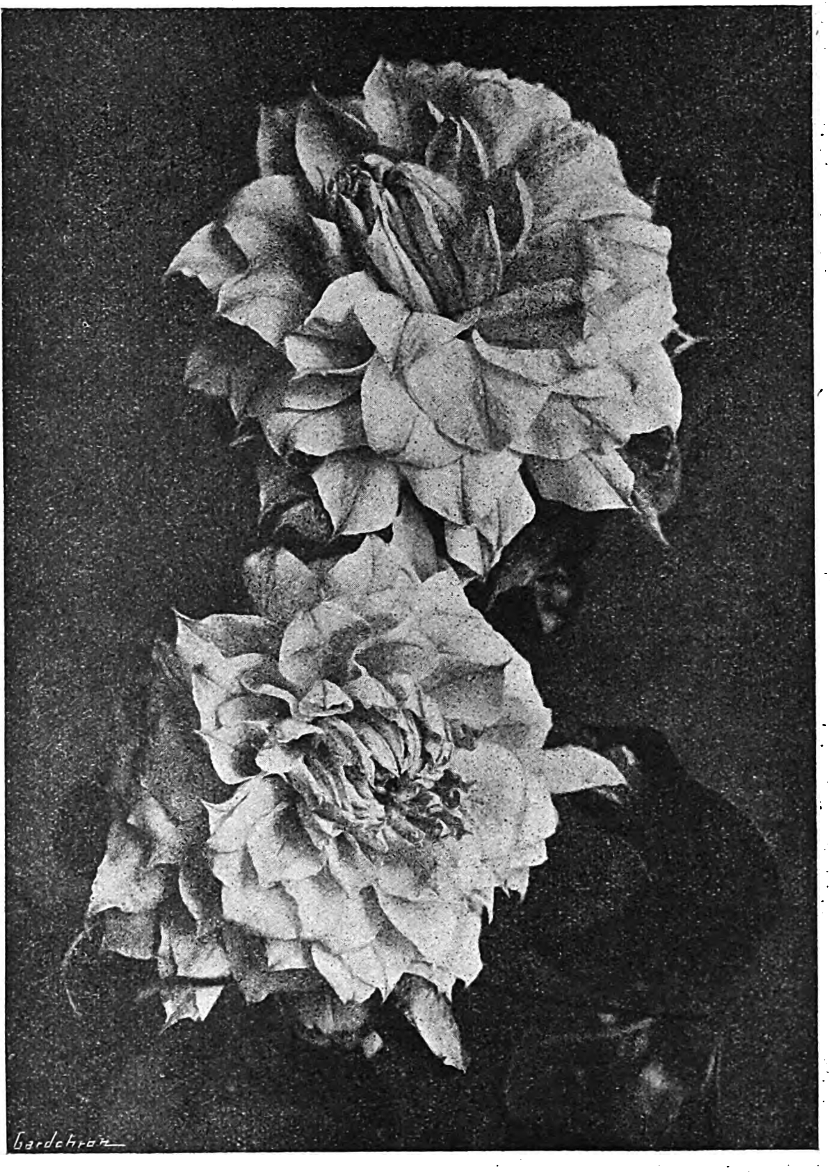


FIG. 132.—CLEMATIS LUCIE LEMOINE.

PHILESIA BUXIFOLIA.

IT is agreed generally that the past winter has been one of unusual severity, and although we may experience yet more severe frosts than have occurred in many localities, it is interesting to note from time to time the behaviour of certain plants under trying conditions. The subject of this note is one which cannot be termed hardy, except in the more favoured districts in the south and west. It is understood that hardiness is referred to here as being an ability to withstand our sudden changes of climate; not solely a low degree of temperature, but also fog, rain and other forms of atmospheric humidity and light obstruction, coupled with hot sun and unexpected rises in temperature at unfavourable times.

Philesia buxifolia is a fairly well-known dwarf shrub which is interesting if only for the fact that it belongs to the Liliaceae, a family of diverse characteristics so far as habit is concerned, although usually associated with subjects of a bulbous nature. In passing, it may be recalled that Philesia is so closely allied to Lapageria, a Liliaceous climber, that the bigeneric hybrid, Philageria Veitchii, was raised by the union of the species with Lapageria rosea. The hybrid favours Philesia, having similar leaves and a non-climbing habit.

P. buxifolia is admirably suitable for the rock garden, forming a low, horizontally-spreading shrub of less than a foot in height in gardens. The stems are stiff, and bear alternate, narrow, rolled leaves, about one inch to one-and-a-half inch long, dark green above and whitish below. The flowers are borne singly at the tips of the branches, and are tubular, about one-and-a-half inch to two inches long, and deep rose, tending towards crimson, in colour. In favourable seasons the flowers may be followed by the rough-surfaced, oval or rounded berries. The species occurs from the Straits of Magellan to Chiloe and Valdivia, thus covering about twelve degrees of latitude along the coast of Patagonia, and perhaps extending into Chile proper. We are indebted to William Lobb for the introduction of this useful shrub in 1847, through Messrs. Veitch of Exeter and Chelsea, although it had been previously noted by several botanical collectors. Six years after its introduction the species was exhibited in flower at the old Chiswick Flower Show.

The specimen under consideration is planted on a rock garden (within ten miles of Manchester), in a cool, shady and sheltered position, at the base of a large boulder, and with a north-west aspect. The soil is chiefly peat and leaf-mould. This situation and compost unwittingly approximate to that advised by Farrer in his *English Rock Garden*, where he remarks that P. buxifolia requires a lime-free medium, plenty of water at the roots in summer, and pieces of sandstone mixed with the soil so as to absorb moisture and afford a secure root-hold. The plant has been in its present position for three winters, during which time it has remained untouched by frost and has increased slightly in size. It would appear that the species does not flower very freely in the open and rarely, if ever, sets seeds, but this is a point upon which it would be interesting to have the experiences of others. The fact that growth is comparatively slow probably accounts in large measure for its ability to tolerate our climate, the new growths having been thoroughly ripened each year before the winter sets in. *L. B. C., Cheshire.*

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CHILE AND THE ANDES.*

No. IX.

LEUCOCORYNE OR GLORY OF THE SUN.

THERE were some excellent flower stalls in Valparaiso (Fig. 134). They seemed to do good business, especially with great sheaves of Carnations of the rather coarse, ragged types that one finds in French flower markets. There were Gladioli too, of a big, heavy type—the Primulinus hybrids do not appear to have arrived in Chile. Most beautiful of all were great masses of the lovely, snow-white Watsonia Ardernei. But what interested me most in the flower market, and what I watched closely from day to day, were the bunches of wild flowers that came in from the country. I have a passion for markets. On arriving in any new town in a foreign country—in fact, any town, foreign or English—I always make for the market long before I think of visiting the museum or the cathedral. Museums are all very well, but there is so little in them of which one can become possessed by honest means.

Among markets, on the contrary, I have never gone unrewarded for my curiosity. In the market of Palma (Majorca) I bought the best gardeners' knives in the world, and in the adjoining fish market I saw the Mediterranean octopus or squid, and thereby learned—after battling with the head waiter of my hotel—what excellent eating the octopus is. From Mr. David's world-famous bookstall in Cambridge I have profited much, and at a plant and flower stall near by I often enjoy a "busman's holiday," so to speak, among the alpines.

And so it was at Valparaiso. Soon after our arrival there appeared on the street flower stalls, bunches of Leucocoryne in three distinct colours, lilac, white and blue. I have referred to Leucocoryne ixioides (odorata) in an earlier article, a pretty, pale lilac species which we found in the hills outside the town, but those of the market were infinitely superior to any we had yet seen. The finest of them was the blue one (Fig. 134). The white and the lilac were lovely flowers, and a bunch of either, shown before the R.H.S. would certainly have got an Award of Merit, and created a sensation. But the blue one (Fig. 134) was a flower of startling and first-class merit. Let me describe it. Imagine a wiry, eighteen-inch stem carrying in a loose umbel or head of anything up to six or eight Chionodoxa Luciliae blossoms, the same shape and texture, the same size, or often considerably larger, and the same splendid clear china-blue passing to a white centre, but with three yellow stamens lying out of the perianth; but it is a far lovelier thing than Glory of the Snow, for its length of wiry stem gives it an added grace, both growing and when picked, while as a crowning glory it is deliciously fragrant with a rich, sweet, Almond scent. Chionodoxa Luciliae is called Glory of the Snow, and I shall call this Leucocoryne—so like Chionodoxa in many ways—Glory of the Sun. I bought a bunch or two and they lasted well in water for a week, which, to my mind, is an ideal time for a cut flower to last. I dislike any flowers which become collectors of dust.

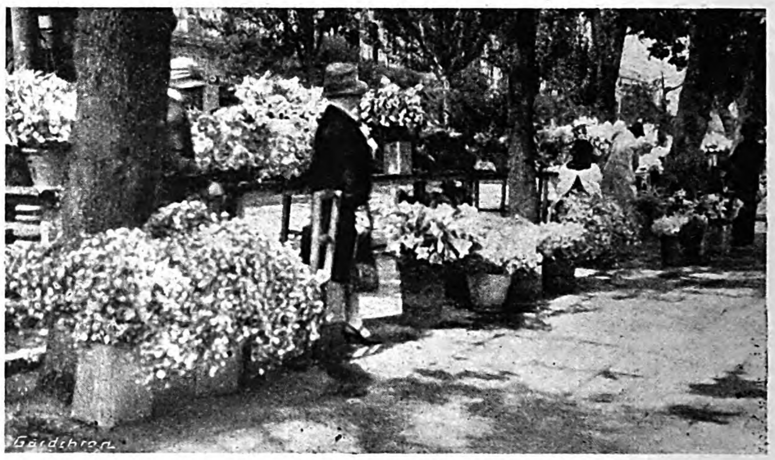

FIG. 133.—A CHILEAN FLOWER MARKET.

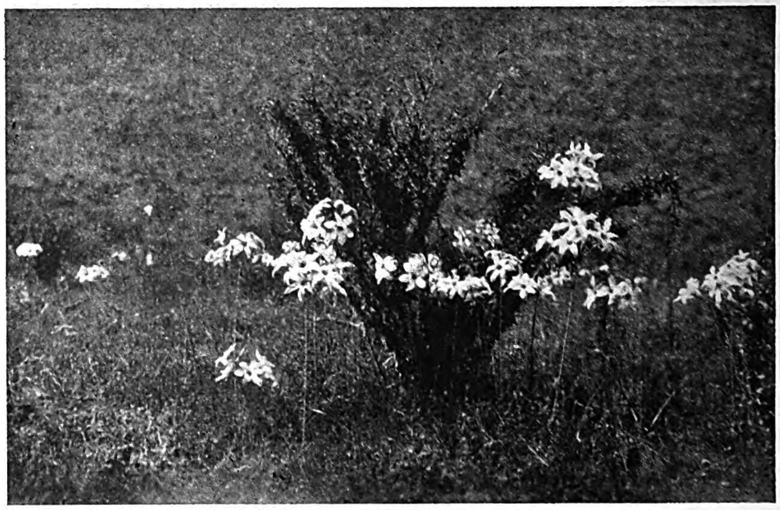

FIG. 134.—LEUCOCORYNE IXIOIDES (ODORATA) GROWING WILD AT COQUIMBO.

Here was a plant to "go for" if ever there was one. It had beauty of form and colour, fragrance, and a good stem, and apart from my own opinion of its beauty, there was sure evidence of a popular appeal as well. A wild flower which can be sold in the streets *in its own country* is a flower to reckon with. We made enquiries as to where this Leucocoryne came from—we had seen none growing in the neighbourhood—and found that it was sent from Coquimbo, a couple of hundred miles northward up the coast, and to Coquimbo we decided to go forthwith; but first we must go down to Santiago and get in touch with Professor Fuentes, of the Herbarium at the National Museum. To Santiago we went, a beautiful town with fine parks and gardens, one of the best clubs in the world, and always and above all the Andes towering superbly in the background. A friend lunched us at the Union Club, an amazing place, far more magnificent than the London R.A.C., but in excellent taste. From the roof garden of the club we had our first real glimpse of the Andes. From Valparaiso we had seen them, a hundred miles or so away, vast, but dim and remote. On our arrival in Santiago it was misty, but on the Club roof our host pointed, and we looked—and looked—and looked. Ten miles or so away foot hills rose and melted into tender vagueness, and looking up to where we expected to see high mountains, was only misty vagueness; then, quite suddenly, infinitely higher than we had yet looked, far higher than we could have expected to see mountains, the Andes sprang into focus, vast and beautiful, too enormously high and vast to be real, almost crushingly beautiful and terrible.

In the centre of Santiago is the Santa Lucia hill, an abrupt young mountain of rock, famous in Chilian history as the centre of a great battle, between Valdivia and the Araucanian Indians

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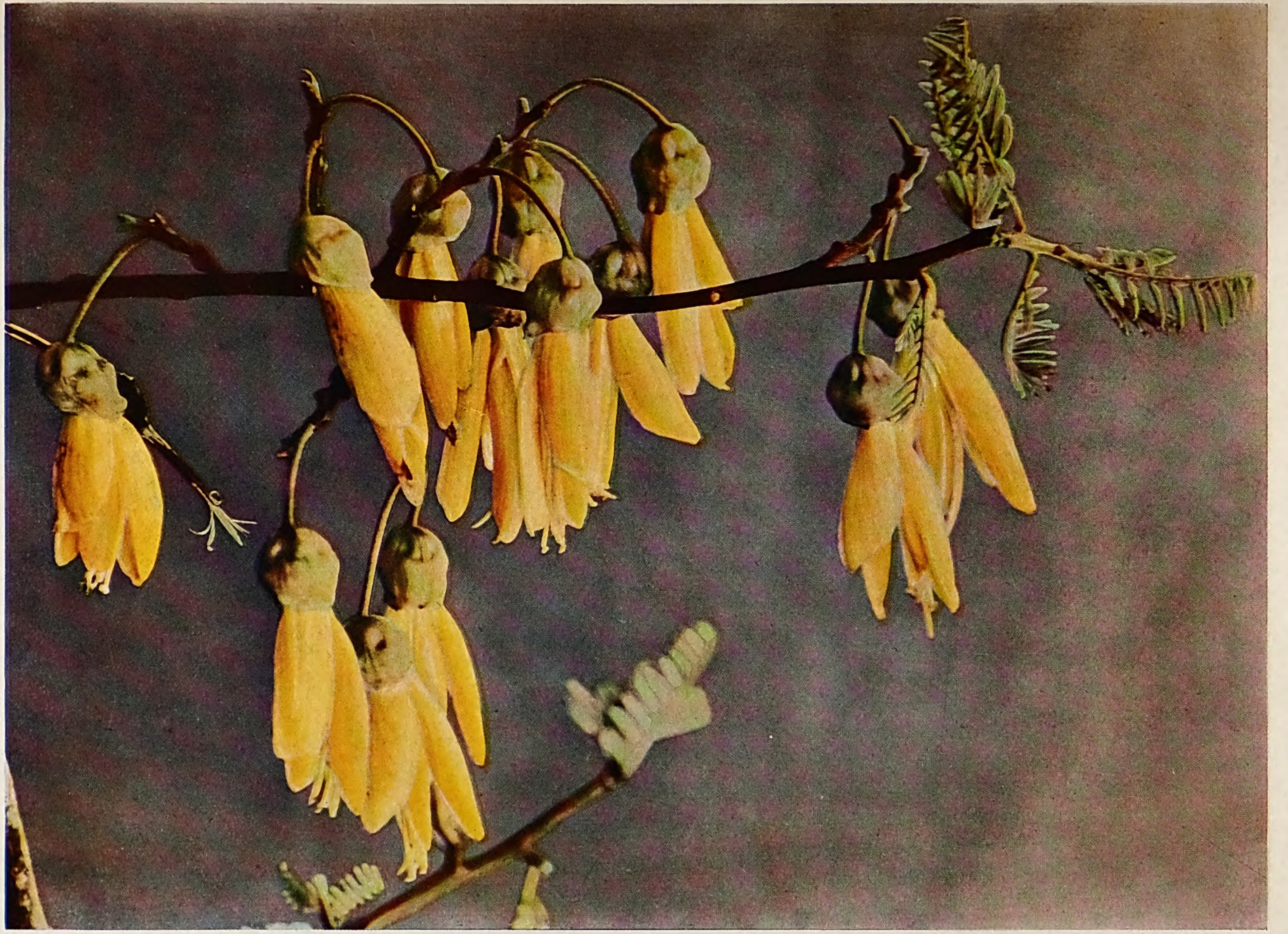
* Previous articles on Mr. Clarence Elliott's expedition were published in our issues of November 12 and 26, December 10 and 24, Vol. LXXXII; January 7 and 28, Vol. LXXXIII; July 28, Vol. LXXXIV; and March 23, Vol. LXXXV.

Supplement to "The GARDENERS' CHRONICLE."



SOPHORA TETRAPTERA.

Santa Lucia is bigger than it appears from a street or two away. A carriage drive winds up its sides. It has been planted with trees, Eucalyptus and Mimosa, etc., terraced and planted with flowers; little paths have been made and flights of steps cut in the rock. Wistarias and Begonias go clambering up and Mesembryanthemums and Ivy-leaved Pelargoniums go scrambling down its cliffy places. There are restaurants, arbours, bandstands, terraces for dancing, and shady seats, and gardeners are ever busy with rake and garden hose.

On our first evening we walked up to a terrace near the summit of Santa Lucia to see the sun set, an impressive view out across the city with its domes and towers and steeples, big Government buildings and a budding sky-scraper or two, and then beyond the town a wide rich plain and over that the appalling snow wall of the Andes, which, for a few minutes, became glowing rosy-pink and amber as the sun went down. Suddenly the light faded out to a ghastly, cold blue. In a few minutes it was night, and we watched Santiago light up; street after street began to blaze and twinkle below us, sky signs grew busy, a mile or two of street lamps flashed out on the far side of the city, sweeping in a wide curve up a hill that faced us, to a hillside restaurant which itself blazed out with electricity. In ten minutes, from warm, glowing sunset, it had become dark and bitterly cold, and we hurried down to lighted streets and our centrally-heated hotel. Sunset and the lighting up of Santiago from Santa Lucia hill have led me astray. I ought not to have tried to describe them. I apologise. An American I met in the voyage out did better. He wanted to tell me about a sunset he had seen somewhere in the Mediterranean, but the memory of it froze him to incoherence. All he could get out was "My! you should have heard the passengers going on about it"—which really conveyed quite a lot. *Clarence Elliott.*

ALPINE CAMPANULAS.

The genus Campanula embraces a very large number of species, which vary widely in height, habit of growth and form, and are suitable for a variety of purposes. Some, like C. pyramidalis, and the lesser-known C. Vidallii, respond admirably to pot culture and are useful for conservatory adornment, and others, notably C. latifolia, C. lactiflora and C. persicifolia, are invaluable for the borders.

But it is the purpose of these notes to deal with the Campanulas of low stature, whose name is legion, but among which are many of outstanding merit—indispensable for the rock garden—and in the majority of cases of extremely easy culture, although, of course, there are some which only give of their best when afforded special cultural conditions, such as are embodied in the moraine. Among these, the diminutive C. Allionii, one of the earliest to flower, comes to mind first. This gem succeeds best in the moraine, and there will form small tufts of grey, downy foliage, and during May and June will produce its single blooms, large in comparison to the size of the plant, and of a beautiful rich lilac-blue, on stems hardly one inch long. Then there is C. Zoysii, a delicacy much sought after by slugs, as also, incidentally, is C. Allionii, and therefore, in its favoured position in the moraine, it must be carefully guarded from these marauders. C. Zoysii is undoubtedly one of the most charming, and also one of the quaintest-flowered of the race. It forms close tufts of bright and glossy green foliage, and bears, late in the season, dainty little sprays of delicate flowers of a delightful shade of pale lavender-blue, narrow and tubular, and each with a peculiar five-lobed, puckered mouth. Another species worthy of moraine treatment is the July-flowering, low-growing C. arvatica (syn. C. acutangulare), whose open, star-like blooms, borne in small sprays, are purple in colouring, while the rare C. excisa, whose violet-blue bells are quaintly perforated at the base of each segment and borne on dainty stems of three inches or so in early July, may also be included.

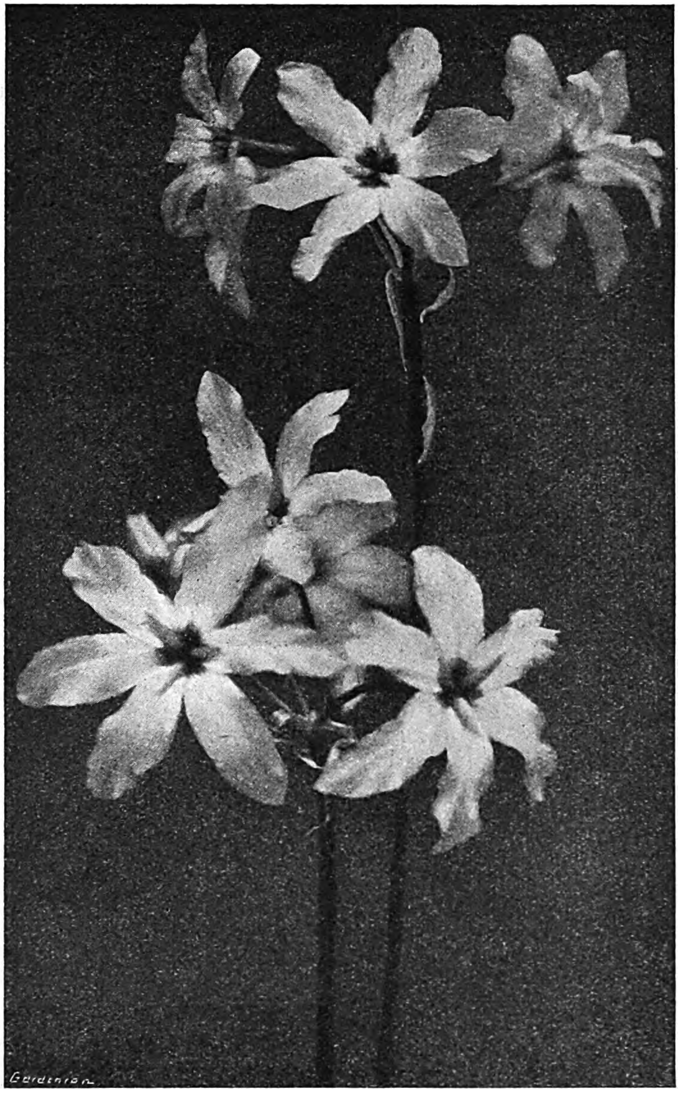


FIG. 135.—LEUCOCORYNE IXIOIDES (ODORATA.)

R.H.S. Award of Merit, March 26. Flowers blue and white.

Shown by Mr. Clarence Elliott (see pp. 252 and 262).

The larger percentage of the alpine Campanulas, however, ask for nothing more than medium, loamy soil and a moderately sunny crevice or ledge, from which it will be seen they are admirable for furnishing rock walls. For producing a massed effect, none is more useful than the popular C. carpatica which, although included here as a rock garden plant, is also very serviceable as an edging plant, or for grouping at the front of herbaceous borders. It is extremely prolific in the production of flowers, and also of seeds, plants from which are fully grown and flower with characteristic freedom in the second year, although propagation may also be accomplished easily by division or cuttings. C. carpatica blooms throughout July, the wide-gaping chalices of violet-blue being borne on nine-inch stems so freely as to completely hide the neat tufts of foliage beneath and to form an unbroken sheet of colour. As might be expected with so easy and popular a plant, there are many distinct forms available, also a few hybrids; among the latter, mention may be made of C. Fergusonii and C. Hendersonii, both very beautiful, but not easy to obtain, nor easy to grow. Among the various forms of C. carpatica there are several white ones of high merit; var. alba is the white counterpart of the type, and var. Little Gem is dwarfer, with snow-white blooms, while the flowers of White Star are of grand size.

Other notable forms of this species are var. Isabel, a distinct sort with extra large flowers of deep violet colouring; var. pelviformis, with flattened, lilac blooms; var. pallida, pale blue, and var. Riverslea, deep blue. Opinion is divided as to whether the lovely C. turbinata is a form of C. carpatica or a distinct species. However, it is one of the most prized, for it forms a dense mass of grey, hairy foliage, close above which are borne, in lavish profusion, large, open saucers of a delicate china-blue shade.

One of the distinct groups of these alpine Campanulas embraces such treasures as that popularly known as C. Bellardii var. Miranda, C. pulla, C. pulloides and C. pusilla, all indispensable. C. Bellardii var. Miranda, one of the late Reginald Farrer's introductions, ranks among the most beautiful; it is of dwarf and compact habit, forming close tufts of foliage which are hidden from view during June and July by the myriads of nodding, silvery-blue bells on short, slender stems. It is easily accommodated in well-drained, loamy soil, and is a good perennial. C. pulla is dwarf and free, its drooping bells of satiny-violet being produced abundantly on slender, three-inch stems above the carpets of bright green and glossy leaves during July; the variety lilacina is worth planting for its lilac-coloured blooms. C. pulloides is even more desirable than C. pulla, if that is possible, for it is taller, and the larger and shorter bells are rich violet, with a satiny sheen; it is an extremely beautiful garden hybrid. C. pusilla has many varieties, is easily cultivated, free-growing, dwarf, with small lavender-blue bells. Among its desirable forms are the charming, white-flowered variety alba; var. lilacina, delicate lilac, faintly tinged with pink; var. Miss Willmott, pale lavender-blue, and var. pallida, a pale blue form.

And then we come to C. garganica and its several varieties which are valuable for the furnishing of sunny rock crevices, both on the rock garden and the rock wall. They are all very popular and much prized on account of their free-growing and free-flowering propensities, the chief characteristic of the blooms being their star-like form. Those of the type are of electric-blue colour, borne on flattened branches radiating from the central tuft of small, heart-shaped leaves. Var. W. H. Paine, a well-tried and popular form, has rich violet-blue, white-eyed flowers; var. alba is the white form; var. erinus has glossy-green leaves and rich china-blue flowers with pale eyes; and var. hirsuta has grey, downy foliage and lavender-blue stars.

A very choice alpine Campanula of hybrid origin is C. G. F. Wilson, whose large, violet-blue flowers are borne freely on three-inch stems during July; while C. haylodgensis, another hybrid, is also very beautiful, having glossy, pale green foliage and erect, open cups of clear blue. C. Hallii, raised by Mr. A. J. Hall, of Harrogate, has lovely, snow-white little bells on three-inch stems, and is well worth securing; C. R. B. Loder, is an uncommon, June-flowering sort which forms close tufts of pale green foliage and has lavender-blue, semi-double flowers on slender stems four or five inches high; while C. Stansfieldii is another hybrid of high merit which bears, on spreading stems, open bells of soft violet.

C. isophylla is equally at home on the rock garden as in the conservatory or cottage window, and is well worth a place, while C. macrorrhiza, a dainty Harebell from the Riviera, is also valuable, bearing as it does its small, open, vase-shaped, deep violet-purple blooms in gay profusion during June and July. C. Portenschlagiana is an indispensable carpeting species, for it forms large mats of dark green foliage, hidden in July beneath the rich violet bells; while C. Raineri is also very choice, forming close, low tufts of ash-grey foliage, above which, on very short stems, the beautiful china-blue cups are carried.

No selection of alpine Campanulas would be complete without C. Tommasiniana and C. Waldsteiniana, two of the choicest. The former species forms masses of low, bushy stems, five inches or so high, which are set with narrow, toothed leaves, and bear long, slender, tubular and drooping blooms of a delicate shade of lilac. C. Waldsteiniana is of very dainty appearance, its starry, violet and pale-eyed flowers, borne after the habit of C. Tommasiniana, being produced freely during July.

As the various dwarf Campanulas given above by no means exhaust the list of those available, some realisation of the size and variety of this group may be obtained. The majority of them set seeds fairly abundantly and, if these are sown in early spring and the seedlings grown on in small pots, plants of suitable size for permanent planting may be obtained by the autumn or following spring. Many kinds are easily increased by division or, if this is not advisable, cuttings may be rooted in a sand-bed in a cold frame and a stock so secured. All the species enumerated above are hardy and flourish under outdoor conditions in this country, while some of the choicest, such as C. Zoysii, respond well to pot culture, and may well be employed for such purposes in the alpine house. When so treated no attempt should be made to force them, as this will result in spindly growth and loss of bloom; they should be allowed to develop naturally in a cold frame and only removed to the alpine house when the flower buds have formed.

So it will be seen the Campanulas form a very fascinating group of rock plants, from a decorative point of view equalling the Primulas, Dianthuses, Gentians and Saxifrages. *M. W.*

ASIATIC PRIMULAS.

Nearly one-third of the recently issued volume of the R.H.S. *Journal*[*] is devoted to the Primula Conference, which was held during the Chelsea Show of 1928, and to the papers prepared for it. Of these, the paper by Wright Smith and Forrest on "The Sections of the Genus Primula," and that by Handel-Mazzetti, of the Natural History Museum, Vienna, on "The Natural Habitats of Chinese Primulas," are of paramount importance to students and cultivators alike.

The first is the latest effort of science in the remarshalling of the genus, which has undergone considerable extension and some modification in the fifteen years which have passed since Bayley Balfour proposed a tentative revision[†] of Pax's original Monograph.[‡] Originally issued as a separate number of the *Notes* from the Royal Botanic Garden, Edinburgh[§] with two plates, the revision by Smith and Forrest reappears in the R.H.S. *Journal* with minor modifications and a few alterations, as well as an illuminating series of plates of various Primroses. These are due, we are told, to the generosity of the Royal Horticultural Society, and have been prepared from photographs taken in China by Forrest and Handel-Mazzetti, or specimens growing at the Edinburgh Botanic Garden or at Wisley. Broadly, these photographs, which will be of unique interest to students of the genus, are of a very high order and redound to the credit of all concerned.

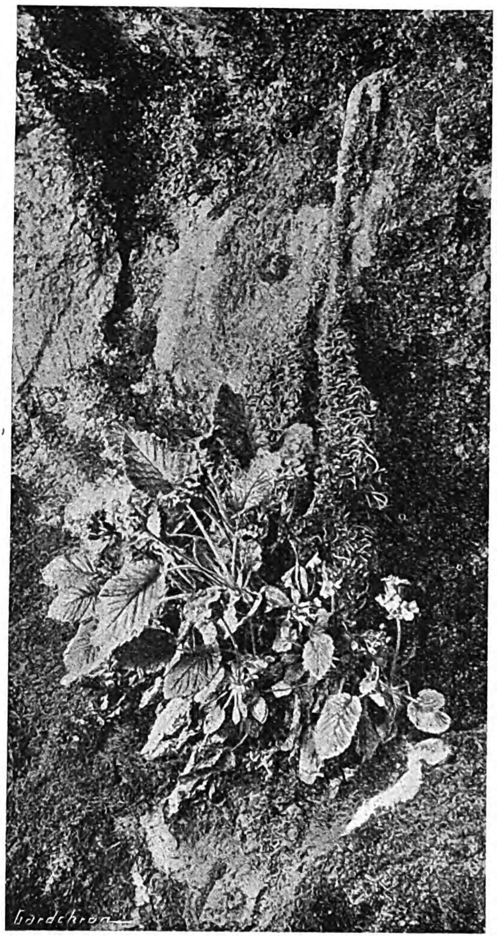


FIG. 136.—PRIMULA FORRESTII.

An old plant on the Lichiang Range, Yunnan; alt., 12,000 feet. Photographed by Mr. G. Forrest, 1906.

Among them there is a wonderful photograph (Fig. 136) of a patriarchal specimen of P. Forrestii, illustrating its peculiar habit of growth and enabling us to appreciate the discoverer's estimate of this species as rivalling human beings in the allotted span of life. The photograph was taken when the explorer was on the Lichiang Range, in June, 1906, at an altitude of about 12,000 feet, and he stresses the point that there is nothing abnormal about the particular specimen, which is but one of many of corresponding habit and great age found in similar situations. The fact that P. Forrestii commonly throws out two whorls of foliage annually makes an estimate of the approximate age of individual plants comparatively easy, and when, on Forrest's return home, the particular specimen illustrated in the photograph was critically examined at Edinburgh, Sir Isaac Bayley Balfour and the explorer jointly reached the conclusion that the rings of scars on the basal part of the ligneous rootstock and the whorls of induviae on the upper part indicated that the plant must have been at least fifty years old.

Forrest has observed that, like most of the genus on the ranges of North-west Yunnan, P. Forrestii is gregarious, forming large colonies on the limestone ledges of the cliffs on the eastern flank of the Lichiang Range at from 10,000 feet to over 12,000 feet altitude. He has noticed that it assumes the pendulous habit so clearly shown in the photograph when growing in the dry crevices of overhanging cliffs, and in such situations the lower part of the stem will often be very woody. These ligneous specimens, however, are not so free-flowering as those in more open ledges, where, rooted in crevices of the rock, the plants are nourished by a certain amount of humus, and flower profusely. In such situations Forrest often found his Primrose growing in company with the beautiful Cypripedium tibeticum, whereof the deep maroon blooms are in happy contrast to the light green foliage and orange-yellow flowers of the Primrose. From November until March the Lichiang Range is heavily coated with snow down to about the two mile level, and in some years even below that, so that in its higher stations P. Forrestii is under snow in winter.

The most successful example of the acclimatisation of P. Forrestii in England, and the oldest is, no doubt, at Caerhays, where, within a few yards of sea level, the plants seem quite at home on the vertical faces of stone walls.

The picture of P. Agleniana (Fig. 137), reproduced from a photograph of a specimen which flowered in the Edinburgh Botanic Garden last year, will assuredly whet the interest of the many who have still to see this fine Primrose in the flesh, and as it also has taken root in the garden at Caerhays Castle, from seeds sent by Forrest, who originally discovered the plant so long ago as July, 1905, and thanks to the generosity of Mr. J. C. Williams, it is now in other gardens, and may make a public appearance before long[*]. The queen of the Nivalid section of Primula, if not, indeed, of the genus, its virtues have been proclaimed by the four European explorers who have seen it—Forrest, Farrer, Ward and Handel-Mazzetti, each in his own way; and with the photograph before us we can appreciate the enthusiasm which sent the greatest of horticultural word-spinners into raptures over the plant which he found on the Shing Hong pass over the Salween-Nmai Kha divide on his last venture. "What are you going to say, then, to a great clumping species which starts as a Sonchifolia, and then sends up, with the leaves, an eight-inch stem, from which develop two to three pendant flowers in the purest Sikkimensis style, but about twice the size of any Sikkimensis ever bloomed, and more Byzantinely bell-shaped? And of the most solid, carved ivory-whiteness, very rarely and very faintly tinged with that lovely pink which my paintbox calls rose antique; with buds like drops of sunset and calyces of maroon-crimson, and a vivid blush of pink or apricot over the tube."[†]

Of the other photographs, with which the papers are so liberally embellished, it is pleasant to see that old friend, the diminutive P. Reidii caught, *en famille*, at precisely the right moment; but to cultivators the *clou* of the illustrations, other than that of P. Forrestii, will doubtless be the delightful pictures by Handel-Mazzetti of P. Beesiana and P. chrysophylla at home.

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[*] Vol. LIV, Part I, Jan. 1929.

[†] *Jour.* R.H.S., Vol. XXXIX, p. 180, 1913.

[‡] Pax, F., and Knuth, R., in Engler's *Das Pflanzenreich*, Heft 22, *Primulaceae* (1905).

[§] Vol. XVI, No. LXXVI, 1928.

[*] In his recent lecture at the R.H.S. Hall, Prof. Wright Smith announced that Capt. Kingdon Ward had found a yellow-flowered form of P. Agleniana.

[†] *Farrer's Last Journey*, p. 193.

The paper by Dr. H. Handel-Mazzetti on "The Natural Habitats of Chinese Primulas" is most interesting and, indeed, most enlightening on a subject about which cultivators are for ever seeking information. Field tickets are necessarily brief, and in many cases are not accompanied by photographs, nor subsequently amplified; so that much is left to the imagination of the cultivator. In his paper, however, Handel-Mazzetti, in simple language contrives to convey a happy verbal picture of the conditions in which many of the Chinese Primroses grow. Of P. sonchifolia, he tells us:—"On May 18 (1914), on another mountain in Szechwan, there was at the same altitude (14,200 feet) no snow at all and Primula sonchifolia, Franch., was in full flower. It is indeed especially fitted for early flowering. The broad and thick, succulent leaf-sheaths, and the close-set leaves not quite unfolded yet, with the flowers embedded between them, as in a warm nest, offer an effective protection from cold winds, and the growing place is selected with a view to that, in the deep ground of dense Fir forests or under a still closer roof of gnarled Rhododendron trees about thirteen feet high, amongst thick cushions of hepatics and Dicranum perfalcatum, Broth., and on deep black soil covered by Rhododendron leaves, and similar to the alpine turf, neutralising the differences of the various mineralogic substrata. There it flowers alone so early, sometimes together with Chrysoplenium Davidianum, Decne., and only on quite open places warmed by the sun there are some few other flowers opened at the same time."

Primulas of the Nivalid section are generally so unresponsive to cultivation here that Handel-Mazzetti's observations of them will be read with especial interest:—"They (the tall Nivalids) belong to a plant formation which does not conform with any other one known to me from anywhere else, and which I was obliged to give the special name of 'leaf-mould pasture.' The soil here consists chiefly of remains of plants, half-rotten, and under these completely rotten leaves, and especially the leaf-sheaths of the many deep-rooting plants belonging to most various families, and having the bases of the stems enveloped in such. . . . . A considerable part (of the flora) is constituted by the Nivalid Primulas themselves; P. sinoplantaginea, P. leucochna and less markedly P. szechuanica which inhabits also firmer humus on clay-slate. This plant formation is often found on steep slopes and on remarkably dry soil so that it cannot be counted to the moors, although in composition it is somewhat similar to them. It can easily be understood that plants especially adapted to so particular a formation are difficult to cultivate. . . . . Before I treat of other high alpine Nivalids, I must mention one more subalpine one, P. chionantha, perhaps the most vigorous. I only saw it fruiting amongst high herbs along streams, always on markedly vegetable substratum, especially between the roots of Rheum officinale."

Of P. Agleniana (Fig. 137), we learn that:—"In a small valley, one of the last ramifications of the deep-cut Ch'iontson-lumpa, on the way from the Salwin to the Irrawaddy, which, although it rained deplorably and the river was the only road, impressed me deeply as being one of the most beautiful flower gardens, it stood in masses at an altitude of 11,500 to 13,000 feet, on rather stony soil, protected as a bud by its large leaf sheaths, and now partly by branches, and the roof of leaves of dwarf Cherry scrub, which is peculiar to this country, and Rhododendrons, at the lateral slopes near the stream, blooming in the alpine spring, but much after the snow melted."

Scattered over the pages of this paper cultivators will find many observational details which throw light on obscure points. It is often asked, for instance, whether P. sikkimensis and P. secundiflora are naturally lime-haters, and it is evident that they are not. "Rock plants of the temperate zone are: P. aromatica, in damp niches and crevices of limestone rock, P. Forrestii and P. rufa in crevices and ledges of limestone rocks, but on drier places, and their long lignescent rhizomes enable them to expand over the barren rock. P. yunnanensis is often a true rock plant content with the smallest cavities on perpendicular limestone rock-walls offering some nutrition. It is not, indeed, confined to such places, but found also on earth of rough broken edges of roads, and in the sandy soil of Pine forests, but always as a decided limestone plant. P. pulchella is similar in its requirements, inhabiting the same localities, perhaps confined more to hard, stony soil. Like P. sikkimensis, the related P. vittata is common to both zones (temperate and alpine), inhabiting swampy places on limestone ground. The closely-related P. secundiflora is subalpine and alpine on both limestone and clay-slate on deep humus of depressions and moory edges of clumps of Rhododendrons." On the other hand, the position of P. nutans in regard to lime seems as yet indefinite.

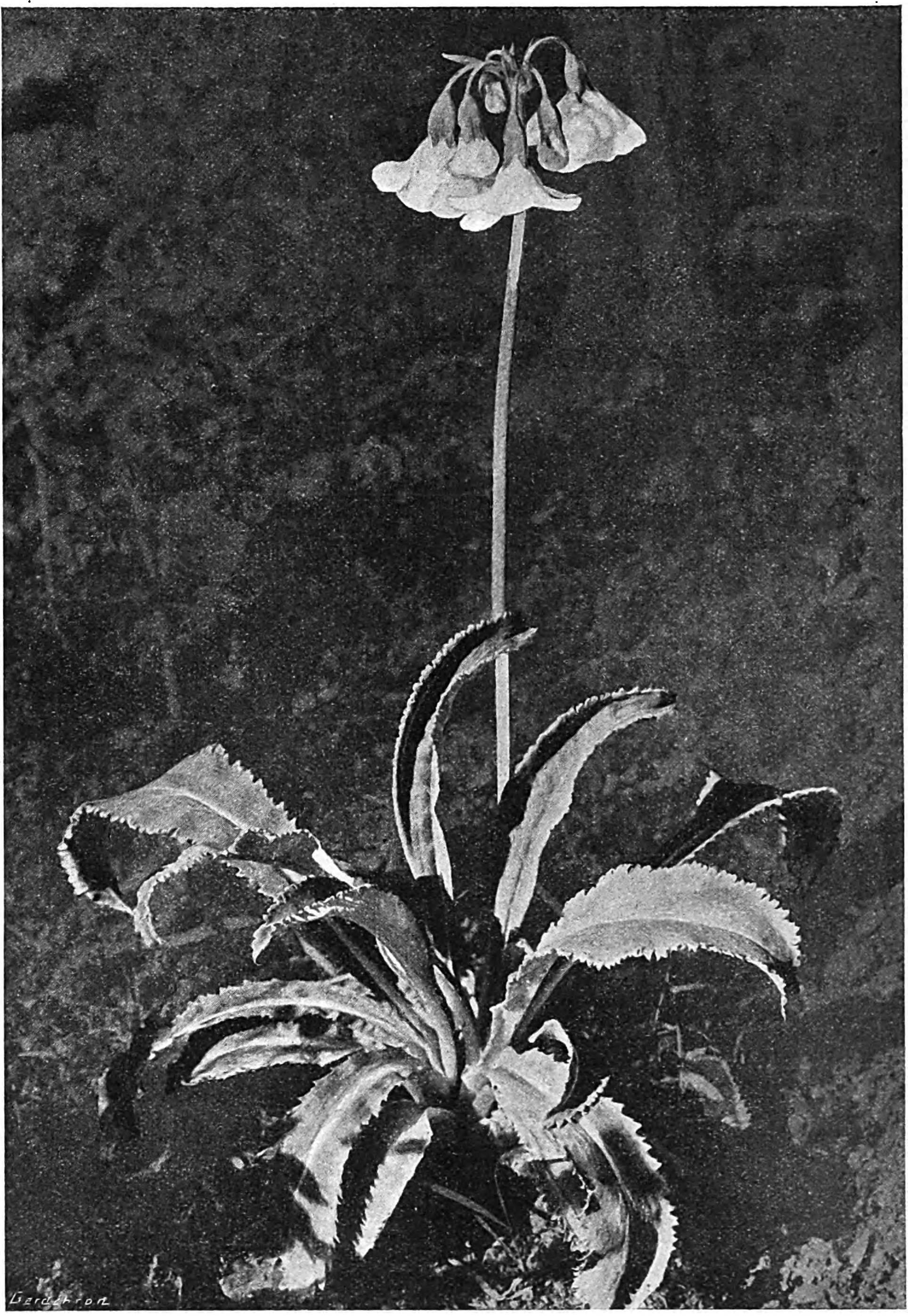


FIG. 137.—PRIMULA AGLENIANA.

Flowering at the Royal Botanic Garden, Edinburgh, in 1928, from seeds collected by Mr. G. Forrest.

No one can yet state how many of the Chinese and Tibetan Primroses now available are likely to be found in private gardens in ten years' time. Only experiment can solve the riddle, and so long as keen amateurs exist, so long, doubtless, will endeavour be made to find out the conditions these alpine and sub-alpine species will tolerate. If, as seems likely in many cases, the stock can only be kept going by constant renewal, the species concerned will remain in the care of interested amateurs and botanic gardens very much as the majority of the Meconopsis genus remains now. But so many patient, clever men are now interested in the cultivation of Primroses that we may look with tolerable certainty to a modest proportion proving themselves perennial. Of the hundreds of Chinese Primroses known to science the proportion at present in general cultivation is minute, and probably does not exceed three dozen. P. Florindae, the last and the largest, can hardly trouble any cultivator; nor can P. pulverulenta or P. integrifolia, which must be the oldest; P. Veitchii, P. Bulleyana, or P. Beesiana. P. Cockburniana is so easily renewed that its usually brief career is no stumbling block, and K. Ward's variety of it seems more perennial. The same may be said of P. chungensis. P. chionantha is sometimes a little more than biennial and is easily managed. P. microdonta and its fine varieties seem most obliging. Those who failed with P. Littoniana when it was first available should try it again, as one or two amateurs have succeeded with it. The same may be said of P. nutans, which Mr. C. T. Musgrave has not found to be calcifugal; it seems less fugitive than it used to be and is worth a deal of trouble. A colony of this species in bloom at Caerhays many years ago was one of the floral sights of a lifetime. P. Waltonii has yet to find its level, but promises well. P. vittata, P. Poissoni, P. pseudo-sikkimensis and P. secundiflora present no difficulty. P. Smithiana and P. helodoxa are content if their thirst is slaked; the latter was killed in many places last winter.

The photographs that illustrate these notes have been reproduced by the kind permission of the Royal Horticultural Society, Prof. W. Wright Smith, Mr. George Forrest and Dr. H. Handel-Mazzetti. *A. Grove.*

THE GENUS PRIMULA.

(Continued from p. 248).

MELANOPS (W. W. Sm.). Nigger P.
(Nivales.)

This sombrely-tinted, perennial species produces a tuft of broadly lance-shaped or oblong, pointed leaves gradually tapering to a winged stalk, in all from two to five inches long; margin edged with sharp, somewhat recurved teeth; upper surface smooth, underside coated with white meal. Flower stem four to six inches tall, bearing an umbel of six to fifteen fragrant, deep rich purple blossoms with almost black centres. Corolla about one inch across, more or less flat, with broadly-rounded lobes; tube cylindrical below, dilated upwards, about five-eighths-of-an-inch long. Flowers in June.

Grows in open or half shady spots on alpine slopes, in south-western Szechuan, at 14,000 feet to 15,000 feet above sea-level.

Culture: Good fibrous loam and peat, in a fairly damp, open spot, should suit it.

MELICHLORA Balf. f.). Honey-coloured P.
(Minutissimae.)

This dwarf, perennial plant, which is a micro-form or sub-species of P. spathulifolia, Craib., produces a tuft of oblong or narrowly elliptic, pointed leaves about one-and-a-half inch long, tapering to a broadly-winged stalk; margins furnished with sharp, regular teeth; upper surface somewhat glaucous and sparsely mealy, underside densely coated with yellow meal. Flower stalk mealy, bearing a solitary blossom, the colour of which has not been recorded. Corolla rather thick in substance, about five-eighths-of-an-inch across, with broad, cleft lobes; tube about half-an-inch long, cylindrical. Flowers in June and July.

This species is found near Tosa, in the Sikkim Himalayas, at 14,000 feet to 15,000 feet above sea-level.

Culture: Plant it in peat and light calcareous loam, in an open situation, if possible among very dwarf herbage, or grow it in a cold frame in a similar compost.

MEMBRANIFOLIA (Franch.). Filmy-leaved P.
(Farinosae.)

A beautiful, tufted perennial species with very thin, pale green, broadly oval or egg-shaped leaves from three-quarters-of-an-inch to two-and-a-quarter-inches long, tapering towards the base with unequally toothed or bi-serrate margins; upper surface more or less smooth, underside densely coated with sulphur-coloured meal. Flower stems slender, three-quarters-of-an-inch to two inches tall, coated with sulphur-coloured meal, bearing an umbel of four to nine soft violet-rose, slightly fragrant blossoms with a yellow eye. Corolla five-eighths to one-and-a-quarter inch across,slightly concave; lobes broadly heart-shaped, notched; tube funnel-shaped, greenish-yellow, two or three times as long as the calyx. Flowers from May to August. Introduced in 1908. (*Gard. Chron.*, Fig. 100, p. 207, 1911, Vol. L).

Grows in mossy clefts in wet limestone rocks, in shady places, with a northern exposure, on the Tali range, in Yunnan, western China, at 9,000 to 11,000 feet above sea-level.

Culture: Grow it in peat, leaf-soil and chopped Sphagnum-moss, in a cool, shady spot kept saturated with moisture when the plant is in growth; or plant it in a crack in a limestone rock, packed with similar compost.

MENZIESIANA (Balf. f.). Menzies P.
(Muscarioides.)

A very charming species from the alpine regions of the eastern Himalayas, with a spreading rosette of non-mealy leaves about one-and-a-half inch long, with elliptic blades about one inch long, rounded at the tip, abruptly or gradually tapering below into a winged stalk with an obscure sheath at its base; margins furnished with regular, blunt, rounded teeth frequently with a sharp point at the tip; both surfaces pale green and clothed with glandular hairs. Flower stem about three inches tall, glandular-downy, bearing a head of radiating, sub-reflexed blossoms about one inch across. Corolla about half-an-inch long, concave, narrow, deep blue or violet with a white eye; lobes egg-shaped, blunt, bifid, erect; tube cylindrical below, dilated upwards, about a quarter-of-an-inch long. In cultivation in 1915.

Grows in crevices and on ledges of cool, moist rocks, in shady places, usually with a northern exposure, in Bhutan, eastern Himalayas, at from 13,000 feet to 15,000 feet above sea-level.

Culture: Peat, loam and limestone chips in a very cool, damp spot facing north-west, with adequate protection from damp in winter, is indicated. *A. W. Darnell.*

(To be continued).

AN OLD GARDEN PRIMROSE.

Of our old-time favourites of the garden, many are now unknown; in these days of haste and bustle, types of really fine flowers that were studied, cultivated, and perfected in the last century are lost to view, their form and constitution unknown.

It may be that knowledge of their habits faded, or it may be that an insatiable desire for something new induced neglect of the floral gems of days gone by. The tendency is to look for something new, there is eager search for fresh floral forms and a desire to see points of merit, or fancied excellence, in novel varieties. Rarely do we note appreciation of, or even knowledge of the good, time-honoured, truly British flowers like the Polyanthus.

Men of science, taste and judgment are going back to the original species in order to raise new varieties, rather than cultivate and study the beautiful specimens handed down to us by florists of equal taste and judgment.

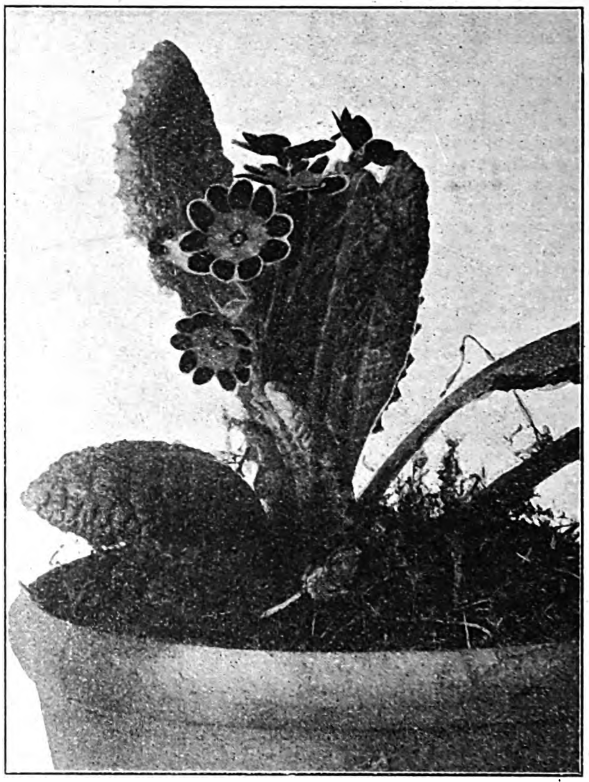


FIG. 138.—GOLD-LACED POLYANTHUS VAR. MRS. JOHN TONGE.

The old sorts seem to be "unwept, unhonoured and unsung." The assiduous quest for novelty is much more conspicuously in evidence than the knowledge of the old types and the appreciation of their qualities and properties.

Masses of bloom used for bold decorative effect are more studied than the characteristic excellence of individual flowers. Groups are insistent in their appeal to the many; the beauties of individual specimens need patience and observation—then comes appreciation, and taste is cultivated.

I here enter a plea for the consideration of a variety of "Prima Rosa"—the Polyanthus, and it is difficult to name any hardy flower which is so generally useful (as vigorous varieties are so easily raised); it is an early, sweet and pretty flower, not difficult to grow; in fact, its cultivation is simple as meadow grass; it is, perhaps, the earliest of hardy florists' flowers, and it will bear any amount of petting.

Its early season of flowering and its delicate perfume are points in its favour. It possesses a graceful elegance of form, a richness of colouring and symmetry of parts not to be found in any other flower.

Like the Auricula, it is so prettily divided at the edge that it appears to have five or six petals. The pip is perfectly flat and round, although slightly indented on the edge; the tube bright yellow, as also is the edging or lacing of the red body-colour, forming so many loops of gold encircling beads of velvety crimson or maroon, and giving the flower its jewelled appearance. Thus is the "Polyanthus" as described in 1750; other Polyanthuses are called "fancy ones," and "common ones." Old Worlidge said: "It is better to trust your eye than any description."

In general, Polyanthuses are not so much appreciated as they should be, considering the wonderful array of beauty they present; for rich and charming inlaid colouring they surpass all other flowers of our spring gardens. They are easily grown, fully fertile, and most prolific.

It is a common mistake to imagine that the florists' types of Polyanthus are delicate and difficult to grow, basing this idea on the facts that florists who are exhibitors carefully tend the special plants of their choice, feed them and protect them so that when placed on the show bench the blooms will be as perfect and as unspoilt as may be. Cultivation of plants for exhibition must necessarily be different from ordinary garden culture.

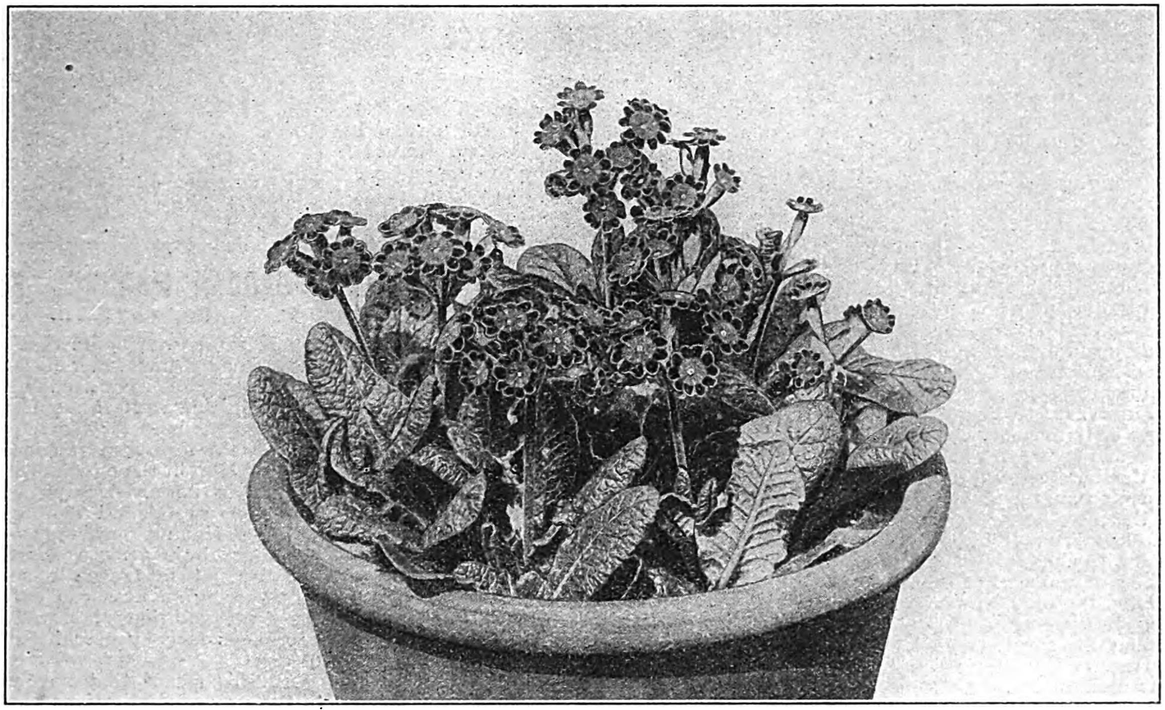


FIG. 139.—GOLD-LACED POLYANTHUS.

For the moment, I am not concerned with the merits of the flower as a show flower (Fig. 138), but with its utility and surpassing excellence over other forms as a bedding plant for brilliancy and decoration; "It will snatch a grace beyond the reach of art."

The highest type of Polyanthus is, if anything, hardier than the common, or fancy, types grown in the borders. A bed of gold-laced Polyanthuses has a distinction all its own. "Common sorts thrive in ordinary borders, there is no peculiarity changing the nature of those which are specially prized, they are possibly more robust than the commoner ones, and they grow stronger; there is no reason why the prized varieties should not be grown as well as the common sorts." (*Gardener and Practical Florist*, 1843.)

Probably the reason for the general disappearance of the old type is due to the habit of raising plants from seeds simply harvested from selected plants that bore some trace of gold lacing.

It would be unwise to recommend anyone to raise seedlings of gold-laced Polyanthuses from seeds bought at shops, except for the purpose of mere plant growing or for quantities to be planted as border flowers.

Select the plants when in bloom, grow them out-of-doors, shade them in summer, and let them have all possible sun in winter. Lift the selected plants about March, before they bloom, pot them and place them in a cool house, or under a bell-glass—with proper precautions. The flowers of these plants, if hand-fertilised, may be expected to yield seeds whence will come blooms of the desired kind (Fig. 139) in some proportion to the quantity of seeds sown.

From a garden miles away sixty plants were selected and planted in a spot very remote from other Polyanthus plants, a good harvest of seeds resulted. As the isolation of the plants had prevented cross pollenation, about forty per cent. of the plants raised from these seeds were true to type, and from the seeds of selected plants the following season I obtained seedlings of which over sixty per cent. were true; the discarded seedlings were mostly yellow ones.

On another occasion, I had from seeds saved from selected plants, a group of seedlings containing seventy-five per cent. true; the remaining rogues were yellow.

Hand fertilised seeds are, of course, surest, but must be secured with every precaution. A selected type should be saved and isolated for seed purposes. To expect seedlings to come true to the selected form when Polyanthuses of all sorts are grown all around is to expect the impossible, and is contrary to experience. Polyanthuses, Primroses, Oxlips and Cowslips hybridise very readily.

Five years ago, as a contrary experience, I raised six hundred or eight hundred plants from so called "gold-laced Polyanthus" seeds, obtained in the ordinary way of commerce from a reputable seedsman; alas! only a few of the resulting plants showed traces of gold lacing, and not one of the whole number was truly gold-laced; indeed, hardly ten per cent. had traces of gold lacing. Select the plants, isolate or hand fertilise the flowers, and sow the seeds in January; prick out the seedlings while small, giving them plenty of air and space; in this way one may establish a group of a few hundreds of a selected type—if it be the gold-laced type, that is so much to the good.

Strong, though not heavy, soil, well manured, suits Polyanthuses; the site should be sheltered from cold winds, but not deprived of air, as there is no plant that delights more in plenty of pure air. Let the plants be planted deeply where they receive all the winter sunshine and some shade in summer. Polyanthuses will not endure frequent applications of water over the foliage, as this seems to close up the pores and prevent proper respiration.

When planting, set the plants so deeply that the leaves are within half-an-inch of the soil, so that new roots, which are often produced from the "stem," may be able to enter the soil. When replanting, cut off the Carrot-like part of the stumpy root, retaining that part only which has plenty of fibre. Place the selected plants into pots about March, plunge the pots in cinders or ashes in the cool house, and see that there is a free circulation of air around the plants and the pots. Keep them moderately dry during November, December, January and February, but in March they may be mulched, removing one inch of soil, and top-dressing with rich compost. A good potting compost consists of one-third loamy soil, one-third very well-decayed manure and leaf-mould, and one-third coarse sand from river or sea—pit sand is dangerous. *C. W. N., Hale.*

ALPINE GARDEN.

PHLOX DOUGLASII.

The genus Phlox has given us many invaluable garden plants, both for the herbaceous border and the rock garden, among the latter none being more beautiful than the lovely Phlox Douglasii, from the eastern and western Rockies.

It is not by any means the easiest of them to grow, but, on the other hand, it is by no means difficult, if suitable growing conditions are provided for it. Perhaps it is best grown in the moraine, although it is almost equally at home on a moderately sunny ledge, provided it has a deep root-run in soil of a light, loamy nature in which an abundance of chips and small pieces of rock has been incorporated; a surface layer of chips will also prove beneficial in draining off the surface moisture in winter, this Phlox being impatient of dampness around its "collar." Moreover, P. Douglasii would appear to prefer slight shade from the hottest mid-day sun, therefore it should not be planted in a too open and exposed position; the cool base of a large, flanking rock is ideal. Under such conditions it will form a close mat and last for many years, its main branches taking on a gnarled appearance with age, all its short growths being densely clothed with small, narrow and hairy leaves. And then, in June, this close mat of foliage becomes transformed by the numerous beautiful, closely-set flowers into a carpet of lilac colouring, clear and bright in its intensity and extremely attractive.

But P. Douglasii would appear to have one failing, shared by many choice subjects, namely, that of dying-off suddenly, sometimes even when at the height of its glory and in full flower. Therefore it is wise always to have a good stock of plants in hand to meet such emergencies, for the alpine garden should never be without so beautiful a plant. And this is not difficult, for P. Douglasii may be propagated by cuttings of the young, fresh growths, taken with heels in early summer, their lower leaves carefully removed, and inserted in a bed of sand in a cold frame or under a bell-glass. Provided care is exercised in watering the majority of them should root, and although not quick-growing in later life, the young plants should soon make nice little specimens for planting out.

THLASPI ROTUNDIFOLIA.

It is not often that Thlaspi rotundifolia—the Iberidella—is obtainable, and when, at last, it is secured and planted in the rock garden, it seldom survives more than one or two seasons, usually because flowers are produced so prolifically that it exhausts itself and is unable to survive the rigours of winter. But T. rotundifolia is a singularly charming subject, even although the colour of its flowers may not appeal to all plant lovers. It forms a small tuft of little, fleshy, waxy leaves, oval in shape and smooth, and above these, in almost shameful profusion, are borne during summer large, flattened clusters of flowers, of good size, fragrant with the perfume of honey, and of rosy-lavender colouring, but with that illusive bluish tint which, in the eyes of some, detracts from its beauty, although it is not present when the blooms are freshly open. All this, provided it is afforded the conditions essential to its well-being, for if its requirements are not carefully attended to it is almost sure to languish and perish without giving of its beauty.

P. rotundifolia is a sun-lover, and hails from the highest screes of the limestone and sandstone alps of Europe. Therefore, in the alpine garden it is best grown in the moraine, or in a sunny position, in deep, loamy, well-drained soil abundantly supplied with limestone chips and small pieces of rock to ensure perfect drainage and to allow its long tap-root to penetrate deeply. A covering of a pane of glass may prove of use in assisting it to survive the winter. In a warm, sunny season it will ripen seeds which should be secured and sown. *Kent.*

FLOWER GARDEN.

SUNBEAM POPPIES.

These improved Iceland Poppies (natives of Siberia and North America) attracted a good deal of notice when they were first shown at Chelsea a dozen or so years ago, the combination of size and glowing colour being very striking. But many did not succeed with them well enough to try a second or third time, and there is no denying that unless grown very well indeed they are not very satisfactory. They are often to be seen with small flowers on long, wiry stems, bent or crooked. Sown in the open ground in the spring, or even raised under glass early and planted out, they are rarely satisfactory.

The only way to get fine blooms is to sow the seeds in the first half of July, a bad time for sowing seeds, for under glass the seedlings get drawn up if shaded, and scorched if exposed to the sun, and in the open they may be washed away by a thunderstorm; a moist nursery bed in partial shade offers the best chance. The seedlings should be thinned early, if necessary, as legginess is fatal, and so soon as they are large enough they should be pricked out in boxes and put in a shaded frame until established, and later, probably the latter part of August, potted into sixties and grouped in a sunny place in the open. They are not completely hardy at this stage, for 10° of frost may kill the outer leaves and weaken the plants permanently, while a further 5° may kill them outright; so that after the end of October they are safer in a frame. Early in the year, a bed should be prepared for them in a sunny site where they will receive some shelter from the worst of the wind. They need good soil, deeply worked, and so soon after February as conditions permit the plants should be put out one-and-a-half foot apart. The bed will look very thin at first, but they make surprisingly large plants if they have room and good feeding, and it is only from such plants that those large flowers with firm, straight stems, so much prized for cutting, are obtained. They should begin to flower by the middle of May, and will be getting untidy about midsummer, when some summer bedding plants should be ready for succession. The alternative is to grow them in a reserve garden or nursery border solely for cutting, when they may be cleared away in time for other sowings or for seedlings. They are called perennials, but, in most districts, very few survive to bloom twice, therefore it is better to rely upon first-year plants. *A. Petts.*

HOME CORRESPONDENCE.

Ivy Baskets.—Realising how much more his interest is centred in worms than snails, I can quite understand that the Rev. Hilderic Friend did not recommend Ivy for the purpose *H. E. D.* (p. 188) desires. To my mind, it is only he who wishes to study snails in their many aspects who should cherish the Ivy basket. On two occasions it has been my ill-fortune to succeed to some of these relics of a by-gone gardening taste. On the first occasion I, being young and full of artistic endeavours, visualised most entrancing floral effects with growing plants in such ideal frames. But after two seasons I gave up the unequal contest with the untold snails, and reluctantly dispensed with my Ivy baskets and the artistic ambitions associated therewith. Later, I again inherited some of these unparalleled snail resorts. With my enthusiastic youth had gone many illusions, and with them my ideas of the possibilities of the Ivy basket in the scheme of garden decoration, but I had acquired a certain amount of stubbornness of spirit, and determined, snails notwithstanding, to have beautiful flowers in baskets of growing Ivy. But again, I reckoned without my host— . . . of snails —and, after a season of struggle, gave up my hopes and the Ivy baskets. Curiously enough, while thrushes will diligently search along the foot of an Ivy-clad wall for snails, I never saw one investigate these Ivy baskets. *A. C. B.*

Frost Injury to Trees.—The account by Mr. T. Wallace in *The Gardeners' Chronicle* of March 16 (p. 209) of the injury by frosts to some of the Apple trees at Long Ashton, is especially valuable in the data which is given, and I feel sure many readers would welcome, in due course, particulars of the after behaviour of the affected trees. While I cannot recall having seen any instance of similar injury to a fruit tree which might be attributed to frost, I have on several occasions been shown cracks, somewhat similar to that illustrated on p. 210, in the trunks of other deciduous trees. Curiously enough, in each case the injury was attributed to lightning—an explanation of the injuries which I did not accept. As Mr. Wallace evidently realises, injury to trees from winter frosts may well continue undetected for a considerable time, and so frost was not suspected in the instances I have in mind. When a boy, at home in Exeter, I well remember, during a spell of very severe frosts, my father protesting that "now-a-days we do not know what cold weather really is." This was when the swift-flowing river Exe was frozen! He went on to cite a winter of his early manhood when "night after night the thermometer went down well below zero, and in the small hours you could hear the trunks of big trees cracking with reports like those of great guns." Unfortunately, I am not able to give any exact data, but it must have been a winter of the "middle sixties." *A. C. B.*

Old Chelsea Nurseries.— I was very gratified that my little note on the Lapagerias in the great corridor at Veitch's nurseries in King's Road, Chelsea, fifty years ago, brought responses from three old Veitchites. I beg to be allowed to send greetings to them, and to express the hope that they are still as full of zest and activity as, happily, I am myself. I well remember the early "stalwarts" at Veitch's, with John Dominy as first hybridiser. Two famous later raisers—Seden and Heal—doubtless learned their job from him or through his influence. Minns was a great grower of hard-wooded plants, and Tivey of Nepenthes, etc. Then there was dear old George Schneider, whose *Book of Choice Ferns*, published so far back as 1892, still stands on my shelves as a reminder of one of the kindest friends of my boyhood. How I loved to listen to his tales of the battles of the Franco-Prussian war of 1870, through some of the fiercest of which he passed! But there were two other large nurseries quite near Veitch's fifty years ago. At the head of one was William Bull, whose displays of Orchids in his own nursery were features of the season. The other was Wimsett's, which pursued a decorative trade on a large scale. Of course, Chelsea knew older nurseries still, and I often think that an interesting book might be written on these and other famous nurseries of London. I, for one, should read it with avidity, but I fear that it could not compete in popular favour with murder mysteries, which now seem all the rage! Murder mysteries, forsooth! Why not Chromosomes? *W. P. W.*

GARDEN MANURES FOR APRIL.

The grower who hopes that there is a short-cut method of improving his land by an application of highly concentrated fertilisers, is doomed to disappointment, if he has not previously prepared his land for the reception of the fertiliser. As has been previously pointed out, the first step in the enrichment of unproductive land is to improve its physical condition by means of careful and thorough tillage, by the addition of humus-forming material and perhaps by under-drainage. In short, the soil must first be put into such mechanical condition that rooting systems can extend in it; after that, the addition of chemical manures may pay handsomely by returning an increased weight of crop.

All this means that no amount of penance in the way of applications to the land can ever atone for the sins of poor tillage. A system of manuring for cultivated orchards may thus be based on the provision of organic manure at least every two or three years; the addition of lime every three or four years to aid in the decomposition of vegetable matter, and to maintain a sufficiency of lime as plant food; and, finally, to maintain an abundance of all forms of available plant foods at the times needed for the development of the tree and fruit, annual applications of chemical fertilisers may be made.

The first two would naturally be applied during the dormant season, but the latter would be applied during the active growing season, and could be used in the proportion of one hundredweight of sulphate of ammonia to three hundredweights of superphosphate and to two hundred-weights of muriate or sulphate of potash. The actual amounts to be applied naturally depend on the character of the soil, the kind of fruit, and the age and vigour of the tree, but these, amounts may be taken as a minimum, and in old-established orchards of bearing trees much larger applications may be given with good results, moreover, the proportions may also be varied to meet particular needs. It may not be always necessary to apply a nitrogenous manure, but in this respect the amount of growth and the colour of the foliage are reliable guides as to the need of nitrogen. When mature or bearing trees make a foot or more of growth on all shoots, and when the leaves are of full size and dark colour, it may be assumed that the orchard has enough nitrogen for current needs, therefore, a free application of a nitrogenous fertiliser might do more harm than good by promoting growth at the expense of fruits.

Nitrogen-fertilising exerts, further, a decided influence in delaying the maturity of fruits, and it is worth while to consider its effect in this direction, for, while the application of such fertilisers to late Apples which tend to ripen too early, might result in profit, their application to early maturing varieties might lead to loss by causing delay in marketing. On many soils also it is better to supply nitrogen by good cultivation—which assists nitrification—and an occasional green manure crop where this is practicable, than by the application of chemical nitrogenous fertilisers.

Even when trees are not growing satisfactorily. and appear yellowish in foliage, good cultivation, begun early and continued frequently, with the use of potassic and phosphatic manures, will frequently correct it. When trees fail to respond to ordinary treatment, however, a dressing of nitrogenous manure may quickly restore them to health and vigour.

In general, phosphoric acid is probably less important in fruit plantations than potash, but the grower should remember that the plants need all the elements of plant growth and that a soil deficient in phosphoric acid cannot give maximum results until this deficiency is made good. Probably the best means of applying phosphoric acid is by superphosphate or a mixture of superphosphate and finely-ground bone-meal, the latter giving also a percentage of nitrogen, and adding to the lasting properties of the dressing. The present month is a good time for the application of such fertilisers.

The fruit-grower will naturally ask how he is to tell just what kind and what quantity of fertilisers he should apply to his land. This is one of those questions which no one can answer for him in detail. Having studied the matter carefully and observed his trees from day to day and year to year, he should be able to discover the treatment which they need. A fruit plantation which is giving wholly satisfactory results demands nothing more than a continuance of the treatment which has brought about those results, but unsatisfactory yields denote that some change in the management should be made, and in many cases quick and relatively cheap results may be obtained by the use of quick-acting chemical fertilisers during the active season of growth. *W. Auton.*

RABBIT DAMAGE TO FRUIT TREES.

The damage done to the trunks of fruit trees, particularly young trees, by rabbits and hares is familiar to most people, but it is seldom that one hears of rabbits climbing trees to feed upon the branches.

In an Apple orchard near East Malling a large number of trees have been attacked by rabbits in this way. The trunks are all protected by wire-netting to a height of about two feet, and it would seem that the rabbits climbed the netting, perched in the crutch of the trees, and gnawed the bark of the branches within reach. Indeed, they must also have climbed fairly slender branches, for it was common to find the branches gnawed at a height of four feet above the ground. Many of the spurs were completely girdled or bitten off, both in the crutch of the tree, and on the branches up to a height of four feet. Some of the more slender branches were also girdled, but usually the upper surface only was eaten. It was common to find branches two inches or more in diameter of which the whole of the bark had been removed along one side for a distance of eighteen inches or so.

The illustration (Fig.140) shows a rather small tree, with branches gnawed to a height of four feet above the ground. Although this was one of the most badly damaged, a great many other trees were attacked to almost the same extent.

When first noticed, it was thought that the damage might be due to rats, but closer examination showed that rabbits were responsible. Their droppings could be seen on the ground under damaged boughs and branches, their teeth marks could be plainly seen in the wood from which the bark had been removed, and certain scratchings abundant on the upper surfaces of some of the branches were obviously caused by rabbits' claws. Presumably the rigours of the frosts of February and March had made the animals very hungry, and so led to this enterprising method of obtaining food. *W. Steer, East Malling Research Station.*

PUBLIC PARKS AND GARDENS.

A recommendation to the Cardiff Town Council to purchase Gillard's Field, at Virgil Street School, for conversion into a public recreation ground for Grangetown has been approved.

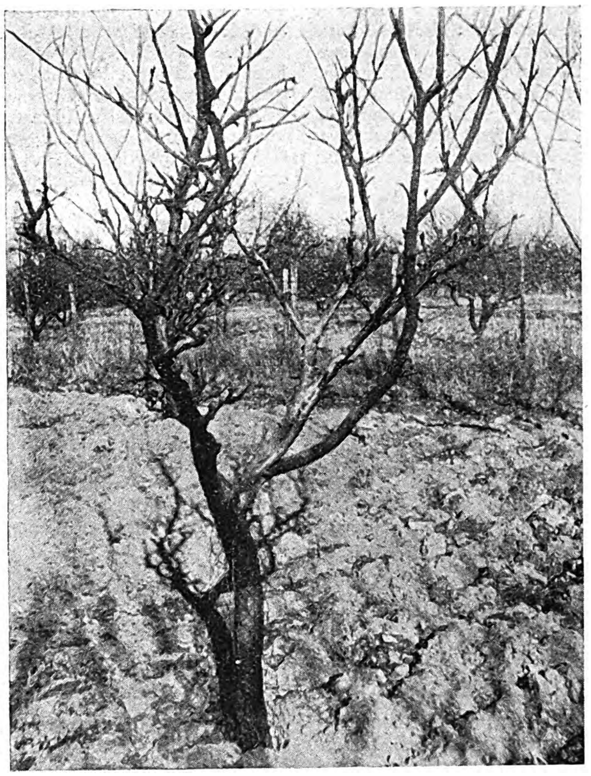


FIG. 140.—APPLE TREE DAMAGED BY RABBITS.

The branches were gnawed to a height of four feet from the ground, the inner surfaces of the branches being damaged as badly as the outer.

At a cost of £1,029, the Crewe Town Council is to level and surface land off New Street for a children's playground.

The Bideford Town Council is recommended to approve a scheme for the lay-out of the Old Town Boys' School site. This includes a shelter, rockery and flower garden at an estimated cost of £430.

The Windsor Town Council has received the title deeds of a six-acre site at Clewer, which is being presented to the town as an open space in perpetuity by Mr. Arthur Stovell and Captain Lionel Stovell.

The Erith Urban District Council has received the sanction of the Board of Education to plans for the lay-out of the Brook Street site as a playing field.

The Kircaldy Town Council has under consideration a proposal to provide public bowling greens in the Beveridge Park and the Third Ward, at estimated costs of £1,750 and £2,900.

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting of this Society, held on March 1, the members of Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, J. Evans, A. Keeling, D. McLeod and H. Arthur (Secretary).

First Class Certificates.

Cymbidium Alexanderii var. Evansiae.—Large, well-shaped flower, slightly flushed; lip with dark crimson marking. *Cypripedium Gwen Hanmer var. album.*—Large, white dorsal sepal and yellowish-brown pouch. Both from Mr. J. Evans.

Sophro-Laelio-Cattleya Margrand var. Tangerine (S.-L.-C. Marathon × *S. grandiflora).*—A large flower of the type, of brilliant colouring. From Mrs. Bruce and Miss Wrigley.

Award of Merit.

Cypripedium Aureades var. Whitecap.—From Messrs. A. J. Keeling and Sons.

Groups.

Messrs. A. J. Keeling and Sons, Bradford, staged Cypripedium Pyramus var. magnificum, C. Porthos, C. Alcivana and several seedlings, together with Epidendrum Endresii, and Dendrobium Lady Colman.

Mr. John Evans, Colwyn Bay, staged Cypripedium Memoria var. J. H. Walker.

At the meeting held on March 15, the members of Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, A. Coningsby, J. Evans, A. Keeling, D. McLeod, W. J. Morgan and H. Arthur (Secretary).

Awards of Merit.

Cypripedium Huglii (C. Pyramus × *C. Elise II, Keeling's var.)*; *Cypripedium Volga (C. Zaria* × *C. Cardinal Mercier)*, and *Cypripedium Amazon (C. Memoria F. M. Ogilvie var. Rex* × *C. Perseus)*.—From Captain W. Horridge.

Lycaste Skinneri, Wivelsfield var., and *Odonto-*

glossum venustulum, Wivelsfield var. From J. Ingham, Esq.

Odontioda Colinge var. Evansiae and *Dendrobium Gatton Monarch.* From Mr. J. Evans.

Odontoglossum Pescatorei var. Peachblossom, and *O. Meredithiae* (*O. Rossi* × *O. venustulum*). From Messrs. A. J. Keeling and Sons.

Cultural Certificates.

To Mr. J. Howes, for Dendrobium Wardianum and Sophronitis grandiflora.

Groups.

J. B. Adamson, Esq. (gr. Mr. J. Howes), Blackpool, staged a group to which a Large Silver-Gilt Medal was awarded. It included Odontoglossum Theresa var. lilacina, O. Chanticler, O. Leeanum, O. Bonar Law, O. Coronation, and O. West Point Beauty; Odontioda Colinge var. Ruth; Cypripedium Boltonii, C. The Major, C. Conference, C. Golden Glory and C. Ernest Reid; Platyclinis glumacea; Oncidium splendidum and others.

Mrs. Bruce and Miss Wrigley (gr. Mr. A. Burns), Bury, were awarded a Large Silver Medal for a fine group containing Lycaste Skinneri var. Sentinel, L. Claret, L. Modesty, L.Goliath, L. alba var. Pearl, L. lasioglossa and L. Tunstillii; Dendrobium Apollo var. album, D. Cybele var. album, D. Rolfeae var. roseum, D. melanodiscus var. Luna, and D. Euryades var. Painted Lady; Vuylstekeara ignescens and Cymbidium Pauwelsii var. Beige, with Cypripediums in variety.

J. Ingham, Esq., Gee Cross, Hyde, was awarded a Large Silver Medal for a collection containing Odontoglossum Lambeauianum var. Mikado, O. rubens and O. Gloriana; Odontioda Gloss; Dendrobium nobile, Berkeley's var.; and Cypripedium Olympus var. The Chairman, C. Vashtii, C. Imperator and several seedlings.

Captain W. Horridge (gr. Mr. Coningsby), Bury, staged Dendrobium Merlin, Boltholt var., D. aureum, D. Lady Colman and D. King George.

Mr. John Evans, Colwyn Bay, staged Miltonia St. André, Cymbidium Devonianum and Cypripedium Enchantress; while Messrs. A. J. Keeling and Sons, Bradford, staged Oncidium superbiens, Cypripedium Charlotte Dillon, and Dendrobium Renown.

The next meetings of this Society will be held on Thursday, April 18, at the Town Hall, Manchester, in conjunction with the Spring Show of the Royal Botanical and Horticultural Society of Manchester and Northern Counties.

SALISBURY GARDENERS'.

The final meeting of the above Society for this session took place in the Lecture Room of the White Hart Hotel, on Wednesday evening, March 20. In the absence of Mr. S. W. Tucker, through illness, Mr. A. E. Davis occupied the chair, and was supported by Mr. P. Baglin, Hon. Treasurer, and Mr. W. F. Gullick, Hon. Secretary, and other officers of the Society. Previous to the Chairman introducing the lecturer, Mr. C. J. Phelps stated that, on behalf of the Society, he would like to convey their congratulations to their Hon. Secretary, Mr. W. F. Gullick, on the recent honour accorded him in being unanimously elected President of the local Chamber of Commerce. This announcement was received with much applause, to which Mr. Gullick suitably responded.

The Chairman welcomed the lecturer, Mr. C. Haysom, of Mr. Dalrymple's nurseries, who had come to talk to them on Freesias. He also extended a hearty welcome to members of the Romsey Gardeners' Society, of which Mr. C. Haysom was a member. A large and appreciative audience listened to the fascinating history of the Freesia, from the time when the first species was introduced under the name of Gladiolus refracta, down to the present wonderfully coloured hybrids, a beautiful selection of which was exhibited by the lecturer. In his opening remarks, he stated that it was not until 1830 that Freesias were classified as such, at which time only three species were known—F. refracta var. alba, F. aurea and F. Armstrongii. One of the first hybrids was secured by Mr. Chapman, of Rye, by crossing F. aurea with F. Armstrongii, which produced the variety Chapmanii. Proceeding, the lecturer stated that in 1914 Mr. Dalrymple became particularly interested in Freesias, and purchased the collection of the late Rev. W. Jacob, and in April, 1918, he exhibited before the Royal Horticultural Society seven coloured hybrids, and gained three awards for them. The first coloured hybrids, however—Canary, Buttercup and Apogee—were raised by M. van Tubergen, and put on the market about 1918.

Valuable hints were given relative to their cultivation, the chief essential being light, sandy soil and sharp drainage. He recommended five-inch Long Tom pots, planting five to eight corms in each. Any fertiliser used should be given in liquid form, and never as a powder. He mentioned that in his opinion the ripening process was the most important. It was essential that the corms be baked, by placing them on a shelf in the hottest part of the greenhouse and covering the box with brown paper so that the direct rays of the sun did not scorch the bulbs.

Mr. Hammond, in proposing a vote of thanks to the lecturer, mentioned that although they had had some wonderful lectures during the session, he felt that "the best wine had been kept until last." Not only did the Society greatly appreciate the valuable information that the lecturer had imparted, but they were very grateful to Mr. Dalrymple for having made the lecture possible. The proposal having been seconded by Mr. Asher, it was carried with acclamation.

Before closing, Mr. W. F. Gullick stated that arrangements were being made for the Society's Annual Outing, to take place in July, when they hoped to visit the gardens and grounds of Littlecote, Hungerford, the seat of Sir Ernest Salter Wills. They also hoped to pay a visit, one evening, to Clarendon Park.

The thanks of the Society to the Hon. Secretary and Hon. Treasurer were proposed by Mr. H. M. Barry, seconded by Mr. A. E. Davis. In addition to the wonderful selection of coloured hybrids, exhibited by Mr. Haysom, a well-grown specimen of Freesia Treasure was on view from Mr. C. Dredge, Downton, and a remarkable new hybrid Azalea indica, from Mr. W. F. Gullick.

KILMARNOCK SPRING SHOW.

The seventh Annual Exhibition of Tulips, Hyacinths and Daffodils, promoted by the Glenfield and Kennedy Horticultural Society, was held at Kilmarnock on March 23, when the entries, which numbered over 500, constituted a new high record. There were seventy classes in the open and confined sections, and competition was keen, especially in the classes for white Hyacinths, early single Tulips, and King Alfred, Spring Glory, Sir Watkin and Lucifer varieties of Narcissus. Notwithstanding the prevalence over a long period of low night temperatures there was a conspicuous uniformity in the high quality of the blooms, which compared favourably with that of previous years.

The principal awards in the open classes were as follows:—The John Craig Challenge Cup, for Tulips, in the open section, to Mr. John Cochrane; the Crawford Challenge Cup and Silver Medal to the most successful competitor in the Daffodil open section, to Mr. James Cochrane; the special prize for twelve cut blooms of long Trumpet Daffodils, to Mr. James Dodds. In the confined section, the Ferguson Hyacinth Cup and the Mrs. Bruce Ball Tulip Cup were both awarded to Mr. Charles Barclay, while Mr. James Currie excelled in the Daffodil section and secured the Mrs. Jane Kennedy Cup. The achievement of the latter competitor is all the more creditable when it is explained that all his exhibits were grown in the windows of his dwelling house. The best pot of Tulips in the show were exhibited by Mr. James Watson (variety Prince of Austria); the best Hyacinths by Mr. D. E. Drummond variety White Friar); and the best Daffodils by Mr. James Dodds (variety Van Waveren's Giant).

Obituary.

Richard Cobley.—In spite of his eighty-four years, Mr. Richard Cobley, of Walnut Tree House, Cheshunt, was hale and hearty up to about ten days before his death, which occurred on Tuesday, March 26. Mr. Cobley was a farmer during the early part of his life, but about forty years ago he began to build glasshouses and gradually gave up farming for market gardening. He was a very successful cultivator, and soon had a compact establishment of about fifteen acres. Later, he built another nursery, covering about ten acres. His three sons are well-known in the horticultural world—Mr. George Cobley, the accountant, of Southampton Street, Covent Garden; Mr. R. Seymour Cobley, a large grower of Daffodils and Tulips and intimately associated in business with Mr. George Monro (a nephew of Mr. Richard Cobley); and Mr. J. Cobley, who carries on the market gardening traditions and business at Cheshunt. Mr. Richard Cobley was very highly respected and honoured as one of the pioneers of the great commercial horticultural settlement in the Cheshunt district.

ANSWERS TO CORRESPONDENTS.

Construction of a Hard Tennis Court.—*A. R.* For a red hard tennis court, sixty feet by one-hundred-and-twenty feet, assuming the site is fairly level, excavate to a depth of nine inches. If the sub-soil is of a clayey nature, lay three-inch land drains at fourteen feet centres with a fall of six inches running north and south, connect these to a four-inch land drain with a fall of three inches running east and west to the lowest point. Lay the first line of three-inch drains two feet in from where the stop net fencing will be erected, *i.e.*, two feet, fourteen feet, fourteen feet, fourteen feet, two feet. Fill in to a depth of six inches with broken bricks, rough clinkers or other similar material, consolidate with a heavy roller, and then add two to three inches of fine ash, which, if dry, should be watered well, and consolidate it. Make up any weak parts with fine ash before commencing topping. Finish it with a two-inch layer of fine, screened red rubble, put on in three layers of one inch, three-quarter-inch and a quarter-inch, each layer being well watered and rolled. The court will then be ready for permanent marking. The approximate cost of this type of court, assuming the materials are conveniently situated and within reasonable carting distance, including fencing, posts and nets, and lead markings, is £130. These dimensions and quantities may be adjusted to suit circumstances.

Cutting Back Privet; Sowing Pea Seeds, etc.—*H. P. C.* No harm should accrue if you cut back your Privet bushes as you suggest. You should get quite good results from both Sweet Peas and culinary Peas if the trenches are made now; whether you use artificial or organic manure it should be well mixed with the soil. It is not too late to plant Rose bushes, provided they are tended carefully with regard to watering and mulching later; six good free-flowering sorts are Shot Silk, Betty Uprichard, Lady Inchiquin, Los Angeles, Mabel Morse, and Caroline Testout; Frau Karl Druschki, the best white, should, of course, be included.

Primrose Foliage Unhealthy.—*E. H. G. S.* The foliage of the double Primroses is suffering from a severe attack of mould, due to the fungus Ramularia primulae. Spray with Bordeaux mixture or, better, dust with dry Bordeaux ("Cupryl" Dry Spray of Craven's, Evesham), so that both surfaces of the foliage are covered by the fungicide. The foliage must be dry prior to spraying and slightly moist if a dust is used.

Communications Received.—A. T. J.—W. A.—G. F. W—F. J.—S. A.—W. L.—A. G.—H. C.—J. C.—D. M.—H. F.

THE
Gardeners' Chronicle
No. 2207.—*SATURDAY, APRIL* 13, 1929.

CONTENTS.

Afforesting sandy wastes 272
Alpine garden—
  Gypsophila cerastoides 276
  Saxifraga Elizabethae 276
Anemones, some April-flowering 280
Bog and water garden—
  Parochetus communis 276
Book, notice of—
  Lilacs, a book on ... 281
Bulb garden—
  Allium Beesianum... 276
Bulbs, British-grown... 271
Burgess, Mr. A. E. ... 272
Club root, mercuric chloride for the control of 286
Cyclamen libanoticum 283
Fruit blossoms, order of flowering and pollenation of ... 282
Garden notes from South-west Scotland 280
Gladiolus Hey Day ... 272
Grasses, diseases of ... 280
Hardy flower border—
  Symphandra pendula and S. Hofmannii 276
Plants new or noteworthy—
  Rhododendron sp. (Forrest 21,488)... 277
Primula, the genus ... 281
Problems of plant life 279
Rewards and other things 283
R.H.S. Accounts for 1928... 271
Salix lanata var. Stuartii 283
Societies—
  General Bulb Growers of Haarlem ... 286
  Moray and Nairn Foresters' ... 285
  Paisley Florists' ... 286
  Royal Horticultural 284
Sulphur fumes and plant life 273
Trees and shrubs—
  Daphne Cneorum ... 277
  Olearia virgata ... 277
  Spiraea discolor ... 277
Vegetable garden—
  Cauliflowers ... 284
Vegetables, storing ... 283
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 278
Week's work, the ... 274

ILLUSTRATIONS.

Allium Beesianum 273
Burgess, Mr. A. E. 272
Cyclamen libanoticum 283
Daphne Cneorum 277
Parochetus communis 275
Ward's, Mr. F. Kingdon, tenth expedition in Asia 278, 279

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 47·5°.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London Wednesday, April 10. 10 a.m. Bar. 30·1 Temp. 46°. Weather, Overcast.

Royal Horticultural Society's Accounts for 1928.

Interest in the review (p. 195) of the salient points of the Royal Horticultural Society's accounts for 1928 will have been stimulated by the letter (p. 249) from Sir W. Lawrence, the late treasurer of the Society, which will be read by many as his *apologia*. The late treasurer protests that neither he nor his immediate successor is a chartered accountant, and, no doubt with the approval of his successor, makes the naive confession that each of them has been overshadowed by what he terms the Fowler-Reader-Harper complex, which, to old Fellows of the Society, is another name for the Wilks tradition. It is no disrespect to the memory of the man who salved the Society and laid the foundation of its present prosperity to state that the tradition in question was based on the principle that in matters of administration and finance the general body of Fellows were to be regarded as children and told only what it was considered good for them to know. In the hands of a genial autocrat like the late Rev. W. Wilks, the method worked, on the whole, successfully, because, as even those who did not always agree with his methods were the first to admit, he placed the interests of the Society before all else; but it had begun to crumble before the weight of years made it necessary for the saviour of the Society to lay down the reins. Once he was out of office, history repeated itself, and the *regime* he initiated became unworkable. But established customs die hard, and for reasons which are well understood by old Fellows and probably do not interest the younger ones, the Wilks tradition has yielded slowly and stubbornly to time, to death, and to the inexorable law that institutions like the R.H.S. must either move with the times or go under. Meanwhile, the tradition has hampered the administration of the Society, and not only in the department of finance to which the late treasurer refers in his letter. The fact seems to be that some of those Fellows who have grown up with it and have generously helped in its administration, have sometimes found it difficult to realise that the R.H.S. is no longer the comparatively unimportant, semi-private Society controlled by an astute and far-seeing director with the co-operation of a body of sympathetic councillors who seldom found it necessary to disagree with him. Thanks to the interest evinced in horticulture by the rising generation and the increasing tendency of the times towards publicity, the Society has now become a public body of considerable importance, in which the methods of administration so successfully pursued by the Rev. W. Wilks and those associated with him are totally out of place. One of the responsibilities of such bodies is the presentation of fully detailed accounts in such intelligible form that the "simple souls," who, according to Sir W. Lawrence, write their receipts and expenses on two sides of penny account books, may understand them. It cannot fairly be stated of the accounts as they are presented to the Fellows now, that they are beyond the understanding of men of average intelligence; but they might well be amplified, and when a late treasurer publicly confesses that the most serious disadvantage of the accounts in their present form is the impossibility of obtaining much information out of them, Fellows who are at all interested in the Society may well feel that the sooner the necessary adjustments are made the better. Sir W. Lawrence's suggestion that the Wisley accounts require elaboration is certainly shared by other Fellows, and in the absence of the necessary details to which, as subscribers, they are entitled, Sir W. Lawrence will not be surprised if his view that the Fellows get a good return for the money spent at Wisley, fails to meet with general acceptance. There are many who consider that the return from the ever increasing outlay on Wisley is comparatively meagre, and if Sir W. Lawrence is correct, the reason for this belief is to be sought in the nebulous character of the accounts and their want of detail. This is so far true that there is no mention in the accounts, for instance, of the expense of maintaining the School of Horticulture, nor are details about the School furnished in the annual report. Again, the accounts may be scrutinised in vain for any item relating to the distribution of seeds and plants to Fellows, or as to the cost of the various fruit, flower, plant and vegetable trials. There are few societies which can permanently bear an ever-increasing financial dead weight such as the R.H.S. has imposed on itself at Wisley, and the Council will not be surprised if many intelligent and loyal Fellows of the Society view the constantly increasing outlay with apprehension. The financial policy at present in force in relation to Wisley has only to be carried to its logical conclusion and the day must come—five, ten or twenty years hence—when the President will find it necessary to announce to the Fellows that the capital expenditure on the Gardens has reached a point beyond which it is inexpedient to go; by that time it may amount to hundreds of thousands of pounds! It is not always remembered that only a fraction of the total expenditure on Wisley is represented by tangible assets. The land is worth comparatively little; the buildings would go for what they would fetch, and the place is of value only so long as the Society pays the bill. As matters are at present, Wisley is the last stronghold of the Wilks tradition, and the sooner Fellows receive fuller information concerning the finances and the general management of the Gardens, the better for the Society and for horticulture in general.

H.R.H. the Prince of Wales and the Linnean Society.—His Royal Highness the Prince of Wales has graciously consented to become an Honorary Member of the Linnean Society of London.

Mote Cricket Ground, Maidstone.—Following the decision of the Maidstone Corporation to purchase Mote Park, which comprises some five hundred acres, for the nominal sum of £50,000, Lord Bearsted has intimated his intention of presenting the Mote Cricket Ground, together with some twenty acres surrounding it, to the Mote Cricket Club, on condition that it will be preserved for the purpose of cricket in perpetuity. The cricket ground, which has a handsome pavilion, erected by the late Lord Bearsted, is to be vested in trustees on behalf of the Mote Club.

The Weather in March.—The lack of rain, together with the unusual temperatures experienced in March, are emphasised by a perusal of the weather records taken at Crow's Nest Park, Dewsbury. At this station only ·31-of-an-inch of rain was recorded for the month. Of the thirty-one days, nineteen were completely rainless, and on three days there were merely slight traces of rain, not sufficient for measurement. The highest temperature recorded was on March 29, when the Fahrenheit thermometer registered 77°, while on six different days, the 10th, 11th, 27th, 28th, 29th and 30th, the thermometer registered 70° or over. The lowest minimum temperatures were recorded on the 1st, 2nd, 4th, 6th, 16th and 17th, the temperatures being 21°, 28°, 26°, 27°, 26° and 26° respectively.

Dutch Elm Disease.—The story of the Dutch Elm Disease, already given in these pages (February 9, 1929, p. 91), is now issued in pamphlet form as Leaflet No. 19 by the Forestry Commission. The leaflet is well illustrated, and can be obtained from the Forestry Commission, 22, Grosvenor Gardens, S.W.1.

The Studley College Flower Show.—We learn that arrangements for the flower show in aid of Studley College, to be held in the New Hall of the R.H.S., on April 24, are proceeding apace, and many leading trade exhibitors have agreed to stage groups, and have also consented to the sale of their produce after the show in aid of the Appeal Fund. Her Royal Highness, Princess Mary, will open the show, and as a practical expression of her sympathy with the movement has undertaken to send a contribution of flowers from Goldsborough Hall. The Organising Committee appeals to horticulturists in general to assist by sending gifts of flowers, fruits, vegetables and dairy produce, and to stage exhibits at this show.

Legacies to Gardeners.—The late Mr. Robert Ward, of Oaklawn, Leatherhead, who died on November 6, 1928, left £100 to his head gardener, Mr. George Buckland, senior.—The late Captain Sir Edmund Charles Nugent, Bt., of West Harding Hall, Norfolk, who died on December 4, 1928, left £100 to his gardener, Mr. Arthur Wiggett.

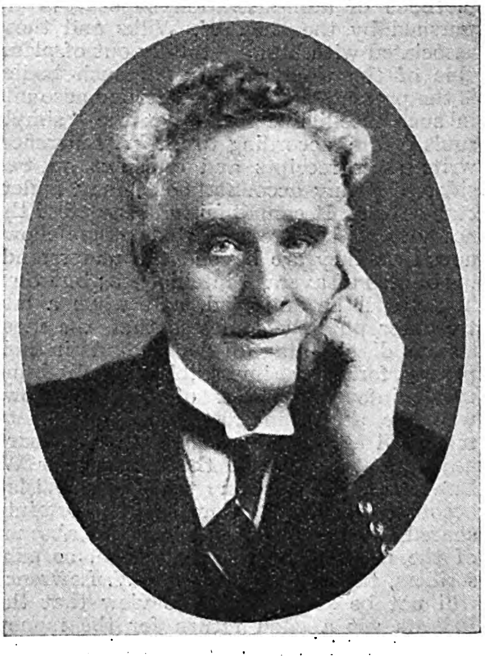
British-grown Bulbs for British Gardens.—Several years ago certain members of the British Florists' Federation presented large numbers of Tulip bulbs to the London parks, with the proviso that when these flowered they should be labelled to show they were entirely of British growth. How far this benefited the trade it is difficult to state, but the Dutch growers were not slow to take advantage of a similar opportunity to advertise Dutch-grown bulbs. Now the Empire Marketing Board is using "Home Bulbs for Home Gardens" as its spring slogan. The series of posters now on view in the Board's special poster frames depict the Daffodil farms of Cornwall and the Scilly Islands, and the Tulip fields of East Anglia, while gardeners are informed that "British bulbs give the earliest blooms." These large and attractive posters are the work of Mr. A. A. Moore, and the separate studies of Daffodils, Narcissi and Tulips, of Miss Irene Fawkes. The Board's interest in the Home Bulb Trade, however, is by no means confined to poster advertising. This will be the second year in succession in which Londoners will have an opportunity of admiring an all-British display of Tulips in the London parks, and again the cost will be shared by the Empire Marketing Board and the Office of Works. This season a similar exhibition has also been arranged in Edinburgh. It remains for bulb dealers to take full advantage of the work of the Empire Marketing Board, by advertising their British bulbs in due course. At the moment, the Board's posters form a good advertisement for the cut flower trade; had the colourful display appeared in August and September it would have proved a better advertisement for bulbs.

Afforesting Sandy Wastes.—Remarkable progress is being made by the Forestry Commissioners in the herculean task they have undertaken in afforesting the famous desert of the Culbin Sands and the great sand wastes in the vicinity of Burghead, on the Morayshire coast. The latter area was acquired in November last from the proprietor, Mr. G. R. McKessack, of Ardgye. Here, Mr. William MacKay, from the Beaufort Forestry School, Ross-shire, is in charge, and he is extremly hopeful of the task he has undertaken. This year he anticipates planting about one hundred acres with 2,000,000 trees, and to complete the whole job within thirteen years at the rate of fifty acres a year. The total area is 1,350 acres. Of this about 750 acres near the coast are to be surface-fixed by Marram grass, used so successfully in stabilising the dunes on the Culbin Sands. The grass creates a fine barrier to the advance of the sand along the coast. The remaining six hundred acres, on which work has now begun, is to be planted with Scots Pine and Corsican Pine. The work on the Culbin Sands is also proceeding apace. Mr. J. E. Annand, Forestry Officer for the north-east of Scotland, whose headquarters are at Craibstone, Aberdeen—the large experimental gardens, nurseries and farm attached to the agricultural chair in Aberdeen University—reports capital progress on the Culbins. By the end of the planting season this year, Mr. Annand hopes to have planted 2,240 acres with Scots Pine and Corsican Pine. This large area has all been planted with trees within the last six years—no mean accomplishment. Years must elapse, however, before the work is complete, much depending on how the moving sands can be fixed with Marram grass, and so enable trees to be planted. A hundred acres per annum is Mr. Annand's estimate of the progress he hopes to make. There is one fly in the ointment, however, and that is the rabbit pest. Rabbits are capable of doing a vast amount of damage to the young trees, and strenuous efforts are to be made to combat them.

Sweet Pea Exhibition in Holland.—The second national Sweet Pea Exhibition is to be held at Arnhem, Holland, on July 12, 13 and 14 next. Preparations are already well in hand, and it would appear probable that the great success which attended the show last year will be even surpassed. A number of valuable prizes have already been presented, and competition in the various classes should be keen.

Cattle Poisoned by Yew Leaves.—The *North British Agriculturist*, in its issue of April 4, reports that at Derbyshire Assizes, before Mr. Justice Hawke, Mrs. Sophie Locker-Lampson was sued by two of her tenant farmers, Messrs. James and Thomas Wilson, Carr Farm, Harthill, for £286 damages for the loss of thirteen heifers poisoned by eating leaves of Yew trees to which they gained access owing to the alleged defective condition of the fences. For the plaintiffs it was urged that it was customary for the owners of woodlands to repair fences. In giving judgment for the defendant, Mrs. Locker Lampson, his Lordship said that where there were wooden fences guarding plantations adjoining grasslands, the invariable rule was for the landlord to keep them in repair, except in cases where beasts belonging to the tenants had broken them down. This rule was due to the fact that the landlord wanted to protect his own plantation and game. He could not find there was any implied contract in the case. The plaintiffs' misfortune was probably due to the conduct of a huntsman in leaving open a gate through which the cattle passed. There was a good deal of hardship on the plaintiffs, and the case was one they had good ground for fighting, but he did not think the defendant was under any obligation to tenants to keep the fence in repair.

Mr. A. E. Burgess.—Few people really understand what the Horticultural Superintendent of a county really is, and what he does. As a matter of fact, he is a very busy man, and his work is very varied. A great part of his time is spent in visiting market gardeners, nurserymen, small holders, and even small gardens and allotments, in order to investigate the various problems which constantly arise, and to give advice. He is responsible for the supervision of school gardens, and conducts classes for the teachers who give instruction in the school gardens. He is usually present at the local flower shows to judge the produce and to advise the exhibitors, and he also judges the garden and allotment plots. He is in constant demand as a lecturer, and is also responsible for the lay-out and upkeep of school playfields and numerous other activities. Horticulture is an important industry in the county of Surrey, owing to the prominence of the nursery trade. The close proximity to London and the large residential population has led to the development of market gardening on a large scale. School gardening, too, is encouraged in the county, and nearly every school has its garden. The number of children receiving instruction weekly is well above 3,000. Mr. A. E. Burgess, the Horticultural Superintendent under the Surrey County Council, succeeded Mr. John Wright, V.M.H., in 1909. His early training was in the Essex trial grounds of Messrs. James Carter and Co. Later, he took a special course of training in the science and practice of horticulture at the Essex County School of Horticulture, at Chelmsford. At the end of the course he was given, without competition, a post on the staff, had charge of the gardens, and acted as Assistant Instructor. After about five years, he was appointed Lecturer in Horticulture to the Hertfordshire County Council, a post he held for nearly six years. In 1909 he was selected out of a large number of applicants by the Surrey County Council, and since that time he has endeavoured to encourage and help horticulturists in general, whether commercial or domestic. During the war period he was Secretary to the Surrey Horticultural Committee which was set up by the Ministry of Agriculture for the encouragement and stimulation of food production, and for his services in this connection he was awarded the M.B.E. In 1927-28, he was President of the Horticultural Education Association, and he is a member of the Royal Horticultural Society's Board of Examiners.



MR. A. E. BURGESS.

Gladiolus Hey Day (= G. Rufus).—This Gladiolus was figured in our issue of August 18, 1928. It was an unnamed seedling raised by W. Purple, of Canandaigua, New York, and Mr. George Churcher gave it the name of Rufus so that it might be put up for an award. A letter received on the 5th inst. from Mr. Purple states that he has now given the variety the name of Hey Day.

Horticultural Exhibition at Dinard.—At Dinard, the well-known French watering place, on August 9, 10 and 11 next, a horticultural Exhibition is to take place under the joint auspices of the French National Horticultural Society and the Dinard Municipality, the Minister of Agriculture having also promised his patronage. It will be held in the rooms and on the terrace of the small Casino, which has been placed at the disposal of the organisers by the proprietors. It appears that a number of English horticulturists have applied for space, and two sections have therefore been provided for, a French section and a foreign one; in each of these there will be seven classes, including one for sundries and one for manures. As the Exhibition will take place at the height of the holiday season, it ought to be well patronised by both French and English visitors.

Rainfall in the Thames Valley.—On the occasion of his re-election as Chairman of the Thames Conservancy Board, at the Annual Meeting of the Board on April 8, Lord Desborough stated that the Thames was passing through the most exceptional time in its history as regards rainfall. During the first three months of this year the rainfall, as gauged in the Thames Valley, was only 2·15 inches, the lowest ever recorded for the first three months of the year. The next lowest was in 1892, when the rainfall amounted to 2·90 inches. The standard average for this period is 6·45 inches, so that there was a deficiency of over four inches for the three months. He reported, however, that the flow of the river had been well maintained, and the water had not gone down much; all the weirs are closed to conserve the water, and the natural flow for the past three weeks had been about 800,000,000 gallons.

Essen Horticultural Exhibition.—The preparations for the great Ruhr Valley Horticultural Exhibition, to take place at Essen in the summer of this year, are almost completed, and the first of the special period-shows will be held from July 6 to 10, when hothouse and pot plants will be shown. From July 20 to 24, Roses will be exhibited, and from the 20th to the 28th of the same month, aquaria and terraria. The third special period will be August 3 to 7, which will comprise hardy plants, pot plants, Cacti, novelties, early fruits and vegetables. From September 7 to 11, Dahlias and Gladioli will have pride of place, and from the 21st to the 25th of the same month, market-, nursery-, and trade-plants will be exhibited. With the final period, October 5 to 13, during which Chrysanthemums, fruits and vegetables will be the chief attractions, the Exhibition will close, after a duration of over three months.

Sale of a Golf Course.—For many years the beautiful park and mansion house of Thrybergh, Yorkshire, have been in possession of the Rotherham Golf Club. The grounds extend to 141 acres, and are well-timbered, with much fine old turf. The estate, however, is now in the market, and will be offered for sale with possession from March of next year. It is on the outskirts of the busy manufacturing town of Rotherham, and unless purchased by the town authorities as an open space, is likely to go the way of so many beautiful estates, that is, it will eventually be covered with bricks and mortar.

National Bulb Society.—The first Exhibition to be held by this Society will take place on Tuesday, Wednesday and Thursday, April 23, 24 and 25, at Messrs. William Whiteley, Ltd., Bayswater. The schedule is in three sections :—(a) open to amateurs only ; (b) open to amateur gardeners' and horticultural societies ; (c) open to the horticultural trade. The cash prizes offered in each of the first seven classes are : first prize £3, second prize £2, third prize £1. Competitors must arrange their displays before 10 a.m. on the first day of the show, or, if unable to stage their flowers personally, they must send them by parcel post to arrive not later than April 23. Further particulars may be obtained from the Honorary Secretary, Mr. A. K. Lock, 9, Gower Street, Bedford Square, W.C.1.

Sulphur Fumes and Plant Life.—In the mining districts of northern Ontario, one of the greatest menaces to vegetation is the sulphur fumes escaping into the atmosphere. The Research departments of the horticultural colleges have, however, paid special attention to this problem, and a method has been discovered of capturing the fumes and turning them to economic account. As, at the present time, in some of these districts it is difficult to grow anything at all, the discovery will be of very real value. Furthermore, sulphur is imported very freely into the same districts, so that a double saving will be effected.

Kenya Colony.—The ninth Annual Report issued by the Department of Agriculture, at Nairobi, Kenya Colony, shows that the total area under occupation by Europeans on July 31, 1929, was 4,996,406 acres, or an increase of 258,486 acres on the previous year. The percentage of areas under the principal crops cultivated are, Maize, 36·4 ; Coffee, 14·2 ; Sisal, 15·5 ; Wheat, 14·9 ; Coconuts, 1·3 ; Sugar Cane, 1·6 ; all other crops, 5·9 ; with 11·4 of land under cultivation but not yet sown. The total area under Coffee is 84,073 acres, while Tea occupies 4,809 acres, giving a total of 33,403 lb. of Tea produced during the year ; it is estimated that the Sisal Hemp harvest for 1928-29 will be 365,000 cwts. About 473 acres are devoted to plants producing essential oils ; 9,408 acres are under Sugar Cane, and 7,994 acres under Coconuts, this last area showing a decrease of 119 acres on the preceding year. In regard to fruits, there appear to be 2,048 acres under general orchards, 391 acres under Bananas, 121 acres under Pineapples and 36,297 acres under Citrus trees. Interest is taken in Tobacco cultivation, and already 187 acres are devoted to this crop, while the cultivation of Castor Oil has declined from 965 acres in 1925 to 92 acres in 1928. Agricultural exports for 1927-28 amounted to the handsome sum of £2,839,492.

Botanical Society and Exchange Club of the British Isles.—The Report of this Society for 1928, now in preparation, and which it is hoped will appear in June, will include a new Monograph of the Batrachia, by W. H. Pearsall ; Palmate Orchids, P. M. Hall ; A New Hybrid Orchid, Dr. Heslop Harrison, F.R.S. ; Potamogeton natans, J. Gordon Dalgleish ; Rubi Britannici, W. Watson ; Sixteen New Species of Taraxaca, Dr. Dahlstedt ; New Sub-species and Varieties of Chenopodium, Dr. J. Murr ; A Flora of Ross-shire, G. C. Druce ; Paintings of British Brambles, Miss C. G. Trower, with descriptions by W. Watson, edited by the Secretary, with about twenty-five plates ; Chenopodium, nov. var. in Britain, Dr. Aellen ; Scirpus americanus Pers. in Lancashire, R. E. Baker ; Weingaertneria canescens in S. Lancashire and Circaea alpina in Carmarthenshire, by Mr. Justice Talbot ; Potamogeton Drucei in Dorset ; Galium constrictum (debile) in the New Forest ; Rosa Afzeliana at Blore, Stafford ; Bursa rubella in Surrey ; New Taraxaca ; Orchis praetermissa var. and Thymus zetlandicus, in Harris ; and Notes on the Flora of Cyprus, etc., G. C. Druce ; Alchemilla subcrenata, Buser, Cave Hill, with A. reniformis, Buser, Druce ; A. britannica, Jaquet and Druce, N. Aberdeen, M. Turreff ; Rosa Desvauxi, Dean Station, Mrs. Wedgwood ; Eryngium campestre, L., Guildford, Surrey, F. Clarke ; Hieracium praecox, Handcross, Sussex, Lady Davy ; Vaccinium intermedium, Ruthe, Dolgelley, Miss Vachell ; and in Derby and Yorks, Gourlay ; Pyrola rotundifolia, L., Bagley, Berks. ; Thymus zetlandicus, Ronn. and Druce, Isle of Harris ; Dondia fruticosa, Dr., Gibraltar Point, N. Lincs, D. W. Smith ; Betula pubescens, Ehrh., Zetland, W. R. Price ; Lolium remotum, Schrank, near Letterkenny, Donegal, Druce ; Pimpinella Saxifraga var. ovata, Sprengel, Cornwall, W. Tresidder, and E. Anglia, Mrs. Sandwith ; Crepis bulbosa, Anglesey, Horwood ; and Chenopodium mixtifrons, Didcot, Berks., and C. deltophyllum, Murr., both sub-species of C. album.

Appointments for the Ensuing Week.—Tuesday, April 16 : Royal Horticultural Society's Daffodill Show (old hall, two days). Wednesday, April 17 : Royal Horticultural and Arboricultural Society of Ireland's Exhibition (two days) ; Midland Daffodil Society's Exhibition (two days) ; Herefordshire Spring Flower Show. Thursday, April 18 : Royal Botanical and Horticultural Society of Manchester and Northern Counties Exhibition (two days) ; Ipswich Gardeners' Association's meeting. Friday, April 19 : Manchester and North of England Orchid Society's Exhibition ; National Rose Society's Show ; Tewkesbury Daffodil Show.

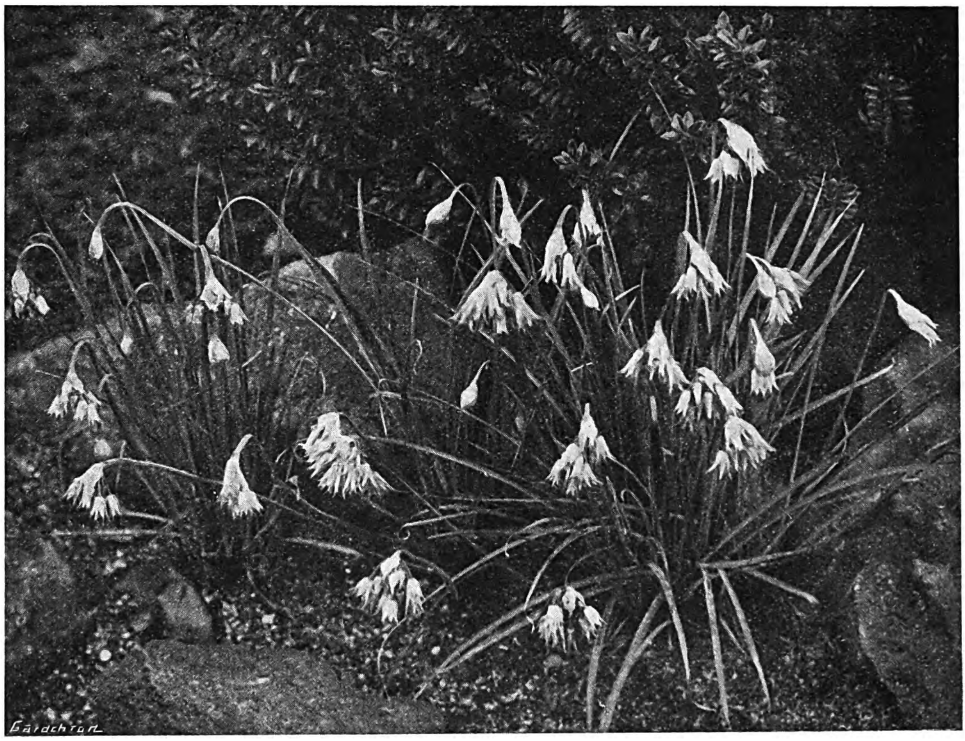


FIG. 141.—ALLIUM BEESIANUM.

(see p. 276.)

"Gardeners' Chronicle" Seventy-five Years Ago.—*Crystal Palace : Interior Planting.*—The report of progress in the grounds at Sydenham, which appeared lately in our columns, will have shown how rapidly the gigantic works in the park and garden there are approaching completion. To the decoration of the interior we have not hitherto alluded, nor are we prepared even now to say more than that we entertain no doubt that the effect produced within the building will be worthy in all respects of the exterior. It is, however, to be remembered that while effect is easily given to the open ground by shifting the position of large trees already growing there, it is quite different with the landscape gardening of the interior. For this purpose an abundance of tender plants of considerable growth is absolutely necessary, and they cannot be procured among the nurserymen. The purchase of Loddiges' noble collection by the Directors of the Crystal Palace, almost exhausted the plant market ; a few straggling specimens may have been procurable elsewhere, but their presence could scarcely be discovered in so vast a building. That such plants exist, however, plentifully in private collections, we have no doubt. Almost everybody who possesses large conservatories must have specimens either already too large to be confined within them or rapidly becoming so. The usual fate of such plants is destruction, greatly to the regret of those under whose eyes they have been reared for so many years. In the nave of the Crystal Palace they would find a ready welcome, such good treatment as would ensure their future health, and free space in which to develop their natural magnificence. We therefore venture to suggest that all who possess fine specimens of plants too large to be longer retained in their own conservatories should hasten to confide them to Sir Joseph Paxton, at Sydenham. Under any circumstances this would be better than destroying them ; we have reason to know that they would be gratefully received, and every donor would have the satisfaction of feeling that he, too, has contributed something to a palace which promises to become the eighth wonder of the world. *Gard. Chron., April* 15, 1854.

Publications Received.—*Perfumes, Cosmetics and Soaps, with Special Reference to Synthetics* ; Volume II, by W. A. Poucher ; third edition, revised and enlarged ; pp. 251, with sixty-six illustrations ; Messrs. Chapman and Hall, Ltd., 11, Henrietta Street, Covent Garden, W.C.2 ; price 25s. net.—*Starting Early Vegetable and Flowering Plants under Glass,* by C. H. Nissley ; pp. 302, illustrated ; the Orange Judd Publishing Co., 15, East 26th Street, New York ; price $3.00.—*Pruning Hardy Shrubs*, by A. Osborn ; and *Salads and Salad-making*, by C. Herman Senn, M.B.E. ; R.H.S. Pamphlets, revised, post free, 6d. each.—*Every Day in My Garden*, by F. Hadfield Farthing ; pp. 414, illustrated ; Alfred A. Knopf, 37, Bedford Square, W.C. ; price 7s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Cattleyas and allied Groups.—The numerous species and varieties of Cattleyas and Laelias, and the various hybrids derived from them, also many of the bi-generic hybrids obtained from the crossing of Brassavola Digbyana and Sophronitis grandiflora with the above, require similar cultural treatment, and may be treated as one group. The varieties are too numerous to enumerate, but collectively these Orchids form a remarkable and important group of gorgeously-flowered subjects. The flowers, many of which have a pleasing perfume, are in great demand for decorative and cut flower purposes, while well-flowered specimens are always very attractive. If a house is set apart for the cultivation of these plants, their requirements are more easily attended to. They thrive well in an intermediate temperature, which may be raised by sun-heat, as only sufficient shade is necessary to prevent scorching of the foliage, which will occur if direct sunshine is allowed to reach the plants after the leaves feel hot when touched by the hands; but shading should not be dense at any time. During the growing season a genial and moist atmosphere should be maintained, sufficient air being admitted to keep it buoyant. Water should not be afforded at the roots in large quantities, except when the growth is nearing completion and the roots are very active; the quantity required varies with the stage of growth, and much depends on the amount of light and air allowed to reach the plants, and the atmospheric moisture in the house, which should always be studied in conjunction with watering the roots. Drastic and sudden changes of temperature should be avoided so much as possible.

Repotting.—Many Cattleyas, etc., are now showing signs of activity, especially the late summer and autumn-flowering kinds. Any plants requiring fresh rooting material should be attended to at this stage. The spring-flowering kinds may be repotted as they pass out of flower. Plants to be dealt with should be carefully turned out of their receptacles, and all sour material and decayed roots removed, especially in the centre of the ball. Retain three or four sound pseudo-bulbs to each lead and pot them in well-drained pots, in a compost consisting chiefly of Osmunda or coarse A.I. fibre, adding a little chopped Sphagnum-moss and lump charcoal; this should be made firm among the roots, and the pseudo-bulbs should be secured to neat stakes. Large specimens should be repotted with a view to leaving them undisturbed for two or three years. After repotting, the surroundings should be kept moist, and the pots and compost surface sprayed frequently on favourable occasions to encourage root action. Very little water is required at the roots for some time, until root and growth action are well advanced, when larger quantities will be needed. Scale insects often attack the plants and should be removed by careful sponging.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Peach Tree Disbudding.—The disbudding of Peach and Nectarine trees is generally performed when the fruits have set. The work requires to be done very gradually and at an early stage, when shoots removed leave scarcely any scar; but if they are allowed to become somewhat woody at the base, the bark is liable to be torn in the process, and gumming and other diseases may follow. The first disbudding should be the removal of all badly placed and fore-right shoots when these are sufficiently long to be easily handled with the finger and thumb. In about a week or ten days time, a second thinning of the shoots should take place, this time preserving the most promising shoot or shoots near the base, one or two about the middle of the fruit-bearing branch, and one at the apex. These last-mentioned shoots are termed "sap drawers," and are stopped at the fifth or sixth leaf. All that is required of these shoots is to convert the sap into food material for the benefit of the fruits. When these fruits have matured, and are cleared, each fruited growth is pruned back to the successional shoot retained at the base. The only exception to this rule is when it is desired to extend the framework of the tree. Then the apical shoot on suitably situated branches should not be stopped, nor, for that matter, should the two laterals, but retained, in herring-bone fashion, to furnish the branch. No growth should be allowed where there is not sufficient space for the leaves to develop. This is an essential condition, as light and air are necessary for the ripening of the wood and to ensure fruitfulness.

Apricots.—The foregoing system, with some modifications, applies to Apricots. These fruit on the spurs, so well as on the wood of the preceding year. There should be an early removal of all fore-right shoots, which only result in useless breast-wood, and the thinning down of the side-shoots where these are numerous. Those retained should be stopped at about the fourth leaf to form spurs, although an occasional shoot should be allowed to extend unchecked to ensure a succession of fruiting wood, and laid in close to the branches from which they arise. With care and judgment in disbudding and stopping, winter pruning of Apricots may be reduced to a minimum.

The Watering of Wall Trees.—Owing to the exceptionally dry spell during February and March, when we registered less than an inch of rain, there is grave danger that wall fruit trees may be suffering from lack of moisture. These trees need abundance of water at this period, and where it is convenient to water with the hose-pipe, they should have a thorough soaking. A mulching of half-decayed manure applied now will help to conserve moisture and sustain a healthy growth on the trees.

The Pear Midge.—The adult insect appears from early April to the middle of May, and commences to lay its eggs in the blossoms, usually on the anthers. Sometimes there are ten or more eggs in each bloom. These hatch into minute maggots which infest the young fruitlets and eat out the interiors. By June they leave the decaying fruits and bury themselves in the soil until early winter, when pupation takes place. The application of kainit to the soil during June is recommended, when the maggots are entering the soil. Running poultry in the orchard from June to August has been found effective. About the only preventive measure that may be applied now is to spray the unopened flowers with soft soap and Nicotine to prevent egg-laying. This wash is made up as follows:—To make one hundred gallons of spray, dissolve 8 lbs. of soft soap by boiling, and add this to one hundred gallons of water; then add 5 oz. to 6 oz. of Nicotine. Mix thoroughly and apply with a coarse nozzle on the sprayer.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Early Vines.—As days increase in length and the sun gains power, work in forcing houses will increase daily. Vines and other fruits will require greater quantities of tepid water and copious syringings twice a day. When the Grapes have finished stoning, attend to the final thinning of the bunches, see that all ties are sound and not too tight, and keep a sharp look-out for red spider on the foliage in dry corners. If red spider puts in an appearance, sponge at once with warm soap water, but the best preventive is good inside mulching and liberal feeding with warm, diluted liquid manure, and good syringing with clean soft water wherever the foliage can be reached without spraying the berries. If laterals continue growing freely—the best proof of moderate cropping—all the weakest may make full growth, but the strongest should be pinched, otherwise they prevent a free circulation of air, which may result in scalding of the main foliage. A little night air is an excellent preventive of scalding, but it should be shut off early in the morning for the two-fold purpose of economising fire and favouring the early re-opening of the ventilators for the day. Successional houses, in which the vines are in various stages, will now require incessant attention, as nothing pays better than performing every operation at the right time. Disbudding is a piecemeal operation, but once the work is finished the shoots push on apace, and in a few days the most forward are ready for the removal of superfluous bunches, stopping and tying down. Some vines are more tractable than others, but in all cases pressure at the first operation of tying the growth in should be very slight, as it is better to allow them time to settle down by degrees than to break them by undue haste. Stopping the growths should not be delayed, as every leaf made beyond the second or third joint after the bunch represents wasted energy.

Late Vines.—This year these vines are later than usual, and should now be helped forward by moderate fire-heat, early closing, and a good syringing with tepid water twice a day. Years ago, spring firing was considered unnecessary, but this trusting to fickle seasons has gone. Where all border space has been made up, a thorough mulch of fresh, rather short, good stable manure is a great help, not only as a root stimulant, but as a never failing source of atmospheric moisture. Late Grapes need a temperature similar to that required by Muscats—55° on cold nights, 65° to 70° by day, and 75° to 80° with sun-heat and moisture after closing, will not be found too high from the time the buds begin to break until the bunches are prominent. From this stage forward another 5° may be given at night and still more by day, when 65° should be the minimum. When the vines come into flower, warm diluted liquid manure may be given to old vines that need it, and tepid water only to young vines; cold, stagnant water should never be used.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens Wisley, Surrey.

Evergreens.—Where evergreens are to be planted in quantity, no time should be lost in commencing and completing this interesting work. The sap of these will soon be rising and root action will commence almost at once. Choose, if possible, dull, showery weather for this work; if dry conditions prevail, then spray them overhead during the evening; large specimens will benefit greatly by this treatment. In every case, irrespective of the weather conditions, leave a basin around each plant and give a thorough soaking of water. Afterwards apply a good mulch of half-decayed leaves or other vegetable matter to check evaporation. Stake all large specimens securely to prevent them being damaged by wind.

Sweet Peas.—Seeds of these popular annuals should be sown in the open at the earliest possible opportunity on sites prepared previously. Those raised under glass may be transferred to their flowering quarters in mild, sheltered districts, provided they have been thoroughly hardened off. From the point of view of garden decoration, nothing is so satisfactory as good Hazel stakes as a means of support. Whether grown in lines or clumps, do not overcrowd the plants—from six to nine inches apart will be close enough. Give support immediately after planting by placing small, twiggy sticks around them; this will also give the necessary protection from ground frost.

Seed Sowing for Spring Bedding.—Seeds of Polyanthuses and Primroses should be sown under glass and the resultant plants hardened off gradually so soon as large enough to transplant to the open border. By sowing now, large plants will be secured by autumn, which will flower profusely the following spring. Choose a half-shady, moist position for the growing quarters during the summer, as they very soon object to drought. Seeds of these come fairly true to colour, especially the white and yellow Polyanthuses. A good strain of the Blue Primrose is always welcome in the garden; seeds of this are rather irregular in germinating, and for this reason it is wise to keep the seed pans for a considerable time and, like all Primula seeds, they should never be allowed to become dry.

Spring Bedding.—The beds and borders containing spring-flowering plants should be hoed, as the surface in many cases has become consolidated. Remove all decaying foliage, of which there is a considerable amount on such plants as Polyanthuses, etc. Daffodils, Hyacinths, Tulips and other bulbous plants will all benefit by having the soil stirred around them.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain,
Brocket Hall, Hertfordshire.

Salvia splendens.—This Sage is a fine subject for growing in the conservatory, and also for grouping in the dwelling-house. Old plants that were cut back late last year should now be producing strong shoots which should be secured as cuttings; these will root readily in a propagating frame in a warm greenhouse, and so soon as they are rooted they should be potted singly into small pots. During the early stage of growth they should never become impoverished, but should be kept growing freely in the greenhouse or frame until the final potting. S. splendens, in its many varieties, is a gross feeder, therefore a good, rich compost should be used, one similar to that employed for Chrysanthemums being suitable. After the final potting the plants may be placed out-of-doors in a position shaded from the direct midday sun. During late summer and autumn they should be fed liberally with soot-water and liquid manure. The growths should be stopped at intervals until about six weeks before they are required to flower. If necessary, a later batch of cuttings may be inserted about the first week in June to produce plants for flowering during mid-winter. Watch for red spider, which attacks these Salvias if they are grown under dry conditions, and if this pest appears, dip the plants in a weak solution of Volck, or some other insecticide.

Begonias.—Tuberous-rooted Begonias may now be started into growth in boxes, the compost at this stage consisting chiefly of leaf-mould and sand. Where some were started into growth earlier, they should now be ready for potting off singly, the size of the pots employed depending on the size of the tubers. The compost for this potting should be on the light side, but for subsequent pottings the soil may be of a heavier nature, care being taken to ensure good drainage. Seedling Begonias, raised as advised previously, should now be ready for pricking off using pots for preference.

Gloxinias.—As growth advances, Gloxinias should be potted on into larger pots, in a compost of turfy loam, peat, leaf-mould and coarse sand. Gloxinias require a moist atmosphere and shade from bright sunshine, and so soon as the receptacles are well filled with roots liquid manure should be given twice a week. Seedlings raised in January should now be ready for pricking out singly in small pots.

General Work.—As seedlings of Streptocarpus, Grevillias, Asparagus medeoloides and Asparagus plumosus, Clerodendron fallax, etc., become ready for transplanting, pay strict attention to their requirements and keep them growing steadily, never allowing them to remain in soil that has become soured.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder,
Knowle Gardens, Dunster, Somerset.

Peas.—Further sowings of mid-season Peas should be made. The distance between the rows will naturally depend on the height of the variety or varieties employed. The seedlings should be staked early, and a mulching of short litter should be placed between the lines to keep the ground in a moist condition.

Potatos.—The planting of early Potatos should be completed so soon as possible, after which the second-earlies may be attended to.

Marrows.—Marrow seeds may be sown now in four-inch pots. A good system of growing Marrows is to plant them in specially prepared beds of one foot depth, filled with good turf and decayed manure mixed well together and made fairly firm by treading. If plenty of turves are available they may be built up around each bed to permit of flooding when the Marrows are in active growth.

Asparagus.—Now is a suitable time for planting new beds of Asparagus, provided the ground has been prepared thoroughly. The surface of the bed should be forked lightly and made level, after which the plants may be put in with a trowel, making the holes of sufficient size to allow the roots to be spread to their full length.

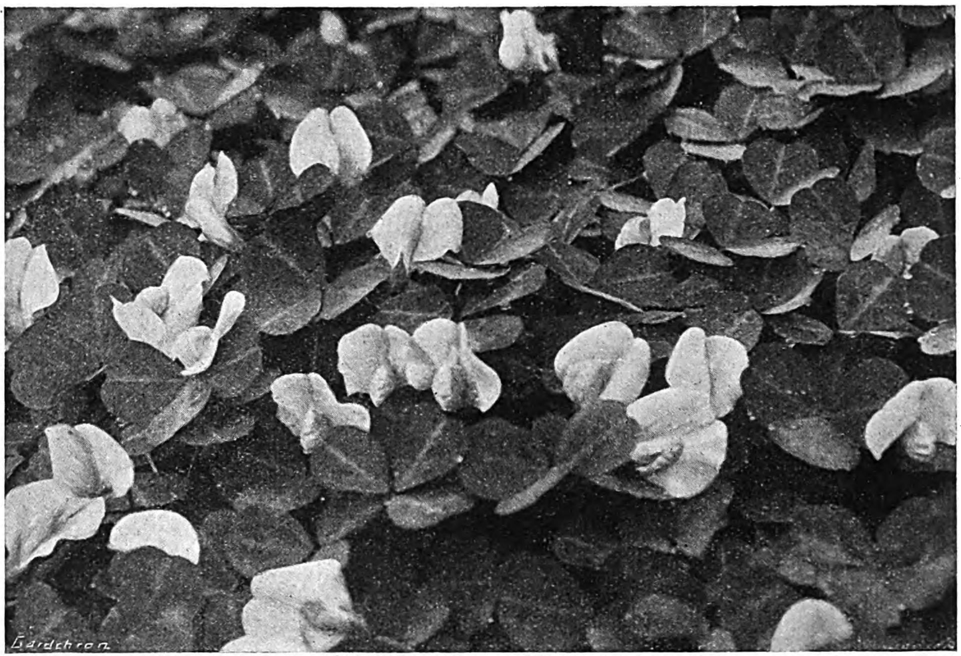


FIG. 142.—PAROCHETUS COMMUNIS.
(see p. 276.)

Salsify.—Salsify and Scorzonera may now be sown in deeply-worked soil, allowing sixteen inches between the drills, which should be two inches deep. When the seedlings are large enough, thin them to not less than one foot apart.

Brassicas.—Final sowings of Cauliflower, Cabbage, early and late Broccoli, Kale and Savoys, may be made with a view to securing good stocks of plants.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq.,
Rosemount, Monkton, Ayrshire.

French Beans.—Successional sowings should be made to keep up a regular supply, for French Beans are always in demand. If grown in pots, a larger size—ten-inch,—should now be used, as the plants will be more vigorous than the early ones. Feed these with liquid manure, applied in small doses when the soil is wet, and give an occasional application of an approved chemical fertiliser.

Brassicas.—The main sowing of these should now be made to provide a supply from late autumn to next spring. Little trouble is being experienced in preparing seed-beds this year as the ground has seldom been in better condition. But, even so, it is advisable to take no risks on soil that is naturally heavy, and the seeds should be covered, as usual, with old potting soil. Thin sowing should be practised and the bed covered with netting as a protection from birds.

Second-early Potatos.—These should now be planted, the distance between the rows and sets being regulated by the variety used, as some produce much stronger haulm than others, and it is a mistake to crowd the plants. The advice governing early plantings applies also to this crop.

Early Cauliflowers.—These may now be planted out in a warm border which has been well prepared. Early varieties, such as Sutton's First Crop, if treated generously and watered in dry weather, make beautiful little heads, but under poor cultivation they merely form "buttons." Even although well hardened off, some protection for the plants should be kept at hand and applied in cases of sharp frosts, or great damage may result. Flower pots of a suitable size inverted over them afford admirable protection, and are easy to handle.

Annuals.—Most hardy annuals may now be sown in the open, and many of them, if carefully treated, make a grand display over a long period. The ground chosen should be light and sandy, if possible, and not liberally manured, or the result will be luxuriant growth at the expense of flowers. If required for cutting, they are best grown in beds, Malopes, Lavateras, Lupins, Nigella, Eschscholzia, Larkspurs and many others being invaluable for this purpose. The above-named sorts should be thinned to at least twelve inches apart, and care should be taken to select seedlings of moderate or event weak growth for retention, as in most instances these give the best results. If grown for display, the group system of sowing is much the best. It is easiest to sow them in shallow drills one foot apart, with other drills crossing them at right angles so as to secure irregular groups. Thinning should be done early and thoroughly, the ground frequently hoed, and a few twiggy branches given for support. If space permits, large patches should be sown, as they give much the best effect.

ALPINE GARDEN.

SAXIFRAGA ELIZABETHAE.

In long past years those of us who admired the Saxifrages ardently desired a good yellow-flowering Kabschia species or hybrid which would flower more freely than the two best known at that time—S. sancta and S. juniperifolia. The position was complicated by the fact that what was sold as S. sancta was generally the inferior S. pseudo-sancta, and it was not possible to have flowers with any profusion on S. juniperifolia, which some of us had to cover with a sheet of glass for the greater part of the year to induce it to flower. Nowadays, we are more fortunate in the possession of free-flowering yellow Saxifrages of the Kabschia section, and among these, S. Elizabethae soon acquired and retained a high place. It bears the name of the late Queen, Carmen Sylva, of Roumania, and has for its parents S. Burseriana and S. sancta. The foliage is spiny, as in S. Burseriana, but of a deep green, and the plant forms a more spreading mass, but is, all the same, remarkably neat. In early spring it is thickly spangled with clear, soft yellow blooms, smaller than those of S. Burseriana, but of much purer yellow than those of S. sancta. They are borne in loose heads on two-inch, pink stems.

The habit of the plant is good, but it appears to the writer that there are two plants grown under the name of S. Elizabethae. The one forms a much closer, denser mound than the other, and is the better form of the two. In cultivation, I find S. Elizabethae very easy in poor, stony soil, with annual top-dressings of sand and loam, and some grit well worked among the foliage in autumn. I give it full exposure and grow it both in a moraine and in the rock garden. The only failing the plant has—and it is one common to many rock plants—is that the centre of the mound, when the plant becomes large, is liable to become bare. Should this happen, which it is almost certain to do, the plant must be lifted and taken to pieces, inserting these in soil composed of loam, sand and grit. I may add that this year S. Elizabethae is late, and to-day (March 20) it is only in bud, awaiting a little more favourable weather to delight us with its bright flowers.

ANEMONE RANUNCULOIDES.

It is pleasant to see that your able contributor, *M. W.* (p. 200), speaks so favourably of Anemone ranunculoides, although he cautions the reader to avoid planting it where it might encroach upon other subjects. I agree with all he writes about this bright little Anemone, and I should like to mention two varieties of A. ranunculoides which are, or were, recently in cultivation. The one is the double variety, A. ranunculoides fl. pl., which is in commerce, and is quite a good little plant, although some do not care for it on account of its flowers being double. Yet it is quite pleasing and suitable for any place where the single form is grown. I do not seem to have seen the other variety offered in catalogues for some time, but it is a very desirable plant, and one which I grew for a number of years. I received it originally as A. ranunculoides var. pallida, but I have observed it named A. ranunculoides var. sulphurea. I first obtained it somewhere about 1906, and to my mind it is even prettier than the type. The flowers are of a pale sulphur-yellow, slightly paler than those of the hybrid A. Seemannii, and are of similar size to those of the typical A. ranunculoides. These forms of A. ranunculoides are all good for carpeting of dwarf, early bulbs, and, in the case of singles, where grown along with or near A. nemorosa, there is every possibility of the hybrid A. Seemannii appearing among seedlings. *S. Arnott.*

GYPSOPHILA CERASTOIDES.

Among the numerous beautiful rock garden plants that the Himalayas has given us is the diminutive and very attractive little Gypsophila cerastoides, a distinct, non-trailing member of this popular genus.

It forms neat, close-growing and spreading tufts of hairy foliage, above which, on stems two inches or so high, the comparatively large flowers are produced during May and June; they are white in colour, delicately veined with purple.

G. cerastoides presents no difficulties in the matter of cultivation, being at home alike in a crevice or on the level, in not too hot and sunny a position, and in loamy soil to which a little leaf-mould and grit has been added to ensure good drainage in winter. It is hardy, and by no means difficult to increase by either cuttings or division, while it may also be raised from seeds. *Kent.*

BULB GARDEN.

ALLIUM BEESIANUM.

So far as can be ascertained, specimens of this exquisite plant collected by Mr. G. Forrest in 1904, were described and named by Professor W. Wright Smith in *Notes* of the Royal Botanic Garden, Edinburgh, Vol. VIII, p. 176, in 1914. It was there stated as coming from the eastern Lichiang range, in western China, where it occurs at altitudes of 12,000 feet and upwards.

Allium Beesianum (Fig. 141) is very closely related to both A. cyaneum and A. kansuense (the latter is figured in the *Bot. Mag.*, t. 6,451); they all come from the same district in western China.

The flowers are borne in hemispherical umbels one-and-a-half inch in diameter, which nod their heads likes groups of hyacinth-blue stars at the apex of slender, stiffly-erect, glaucous-green stems some eight to fifteen inches in height. The individual flowers are somewhat campanulate in shape, a quarter-of-an-inch in breadth, and one-eighth-of-an-inch in depth when fully expanded, with pedicels of half-an-inch to three-quarters-of-an-inch arising from the base of a beautiful, membranous spathe.

The leaves, like the stems, are glaucous-green, rather flat in shape, twelve inches or more in length by a quarter-of-an-inch in breadth, emitting, when bruised, the strong Garlic odour of the tribe, and having the usual trailing habit of that particular section.

Once well established in comfortable surroundings, for A. Beesiana is by no means fastidious as to soil, the bulbs will quickly multiply and provide a host of flowers from the beginning of June right on into August, when flowers on the rock garden are on the wane. The species may be regarded as quite hardy, for in the rock garden at Kew the clump appears to be even larger this year than last, even although it has been exposed to extremely severe weather. *A. Edwards, Kew.*

HARDY FLOWER BORDER.

SYMPHYANDRA PENDULA AND S. HOFMANNII.

These two members of the small genus Symphyandra, which is closely related to, and therefore inclined to be over-shadowed by, the genus Campanula, are valuable subjects for the front of the herbaceous border, both being free-growing and prolific flowering during the later part of the summer. S. pendula is the most attractive of the race, for it forms a large mound, nine inches or so high, and quite eighteen inches to two feet across, of soft, bright green foliage, which is smothered from July onwards (for quite two months) with the lovely, indeed, exquisite, large, campanulate bells of wax-like texture in the most delicate shade of creamy-white, with just the faintest tinge of green, which does not, however, detract from their beauty, and these are produced in such lavish abandon that they weigh down the branched stems, and their beauty would be lost were it not that they form a complete mound of creamy-whiteness. However, a few light twigs of Hazel placed among the flower sprays as supports improve the attractiveness of the plant considerably by lifting the lovely bells and exposing them better to view. S. pendula is also very effective when grown on the rock garden, where it should be planted on a ledge above the level of the eye, when its flower sprays will need no support and its blooms may be viewed in all their exquisiteness.

S. Hofmannii is more erect in habit, and attains a height of eighteen inches, the branched growths being clothed with whitish, bell-shaped blooms, beautiful, but in some way lacking the appeal of S. pendula. Moreover, S. Hofmannii is a useful subject for growing in cool, shady positions, conditions which it would appear to prefer.

Both these Symphyandras are generous in the production of seeds, which germinate with unquestionable freedom, and provide the best means of obtaining fresh stock. They should be grown in deeply-worked and well enriched soil, for there is nothing delicate about their constitution and no lack of freedom in flowering results from generous treatment; they are both perennial, but, perhaps not so long-lived as many of the commoner herbaceous subjects, and may require to be replaced every few years with fresh young plants.

There are other members of this genus in cultivation, notably the lovely S. Wanneri, which requires, however, to be confined to the rock garden, for it is of dwarf habit, its flower-bearing stems being spreading and flattened on the ground, the branching lateral growths all bearing lovely campanulate bells of rich violet-blue, very beautiful. But S. Wanneri lacks the constitution of S. pendula and S. Hofmannii, and often it dies down after flowering, seemingly to seek rest after its magnificent efforts, and fails to appear again. *M. W.*

BOG AND WATER GARDEN.

PAROCHETUS COMMUNIS.

Although not usually considered hardy, some large patches of this interesting plant have survived the severe frost, tender green leaves now (early April) appearing among the bleached and very lifeless looking tangle of last year's growths. On other occasions I have noted that while strong old plants of P. communis, especially those growing in or near the bog, will survive, smaller ones in drier and more sheltered spots have succumbed. Further, of the several slightly different forms of this plant some are undoubtedly more robust than others. The most vigorous grower here has rather pale green leaves, the usual purple or slaty markings on the leaflets being all but absent. This one seems able to withstand anything, and to grow anywhere with extraordinary heartiness, whereas another with leaves of a darker shade, with stems and leaflets stained with purple, and flowers of a richer blue, is comparatively feeble and shy.

P. communis (Fig. 142), a Himalayan plant with a remarkable likeness to a Clover in its leaf and manner of growth, always surprises those who do not know it, not only by producing Pea-flowers, but these of a blue not less pure and rich than that of Gentian verna. The dense crop of leaves does not rise more than about four inches above the mat of trailing, rooting stems, and the flowers, borne singly or in pairs, just peep out of their forest of green with a most charming effect. In a warm, moist soil with full sun, a lusty plant of P. communis will envelop a square yard in the course of the season. The first flowers usually appear soon after mid-summer, and from their coming onwards to the first frost an unbroken succession of bloom will be maintained. This is a first-rate waterside plant, but it often does well in the rock garden, provided it has a good vegetable soil and does not lack moisture in summer. It is easily increased by division and those who deem it desirable to winter a stock in a cold frame will have no difficulty, since any rooted scraps will survive if potted up. These should be put out early in May. *J.*

PLANTS NEW OR NOTEWORTHY.

RHODODENDRON SP. (FORREST 21,488).

This Rhododendron, apparently of the 'Racemosum' series, is an upright-growing bush, two to three feet in height, well furnished with oval leaves, one-and-a-half to two inches long, three-quarters-of-an-inch broad, slightly cordate at the base, with a small mucron at the apex. They are deep green on the upper surface, glaucous underneath, and aromatic when crushed. The stems are slender, reddish-brown in colour. Flowers axillary, in groups clustered at the tops of the stems, not spread down them, thus forming a rather conspicuous head. Each flower is three-quarters-of-an-inch across, very open, a clear rose colour fading to delicate pink. The stamens are prominent, the style is long, considerably exceeding the stamens in length.

This is an attractive shrub; it appears to be hardy and, as it flowers freely during the second and third week of March, is a valuable addition to the smaller Rhododendron series, which are so suitable for planting at the edges of Rhododendron beds or in the alpine Rhododendron rock gardens, which are deservedly becoming popular.

In the Field Notes of Rhododendrons found by Mr. George Forrest in 1922, No. 21,488 is described by him as "Rhod. species ? (section ?) Shrub two to four feet. Flowers ? In fruit. Foliage aromatic. Open situations amongst rocks and scrub on the margins of forests on the Chien-Chuan Mekong Divide."

He adds this note:—"Certainly new to me, rather a striking plant distinguished by its broadly elliptical foliage, the grey under-surface of same, the persistent flower and leaf-bud scales. From examination of dried fragments, I should say the flowers are rose ? "

The plants here described are growing at Headfort, Kells, Co. Meath, in a clearing on an island, in the natural soil which is not altogether free from lime. The trees on the island are chiefly Oak, Beech, Ash, Sycamore, and Scots Pine of mature growth. The deposit for many years of the leaves of the hardwoods seems to have added sufficient humus to the soil to neutralise such lime as is in it. Many big-leafed Himalayan Rhododendrons are planted in similar clearings with satisfactory and encouraging results. *Phylis Moore, Willbrook, Co. Dublin.*

TREES AND SHRUBS.

DAPHNE CNEORUM.

It would be difficult to mention any rock garden flowering shrub which rivals Daphne Cneorum, and it is excelled by none. Not only does this delightful European species blossom copiously, but its flowers are a very attractive shade of pure deep pink, and generously fragrant. Then its habit of growth is good, its foliage is a pleasing green at all seasons, and the plant is usually at its best in spring, maintaining a show of blossom throughout the most important period of the rock garden year.

That D. Cneorum is not always an easy subject must be admitted. Like others of its race, it has its likes and dislikes in regard to soil, and if it is not actually difficult it is sufficiently fastidious to excite the enterprise and test the skill of the grower. What the conditions are which this Daphne needs one hardly dare suggest, since it may often be seen doing remarkably well in one garden under treatment which it would disdain in another.

In central and southern Europe it is generally found growing in peat overlying limestone, and most authorities seem to agree that lime in some form is essential. In my own garden, however, where there is no lime, the red, gritty loam being acid and full of iron, D. Cneorum grows abundantly, some of the oldest plants each covering a space between three feet and four feet across (Fig. 143). All they ever get in addition to the natural woodland loam is leaf-mould, which, of course, is also acid, and I find no appreciable difference in results between plants thus treated and those given lime. The soil, I may add, is very sharply drained, and becomes exceedingly dry during rainless periods in summer. A light top-dressing of leaf-mould and sand is given occasionally, but layering is not attempted as a regular practice. That this latter might prolong the life of a plant is not doubted, but I find it better to discard old specimens so soon as they get lanky, and replace them with new ones.

D. Cneorum varies somewhat in the size of the flower clusters and the compactness of its growth, a form usually listed as var. major being much superior to the average wild plant. Then there is a white one, and the curiously distinct D. C. var. Verlotii, with its smaller and looser flower heads. *A. T. J.*

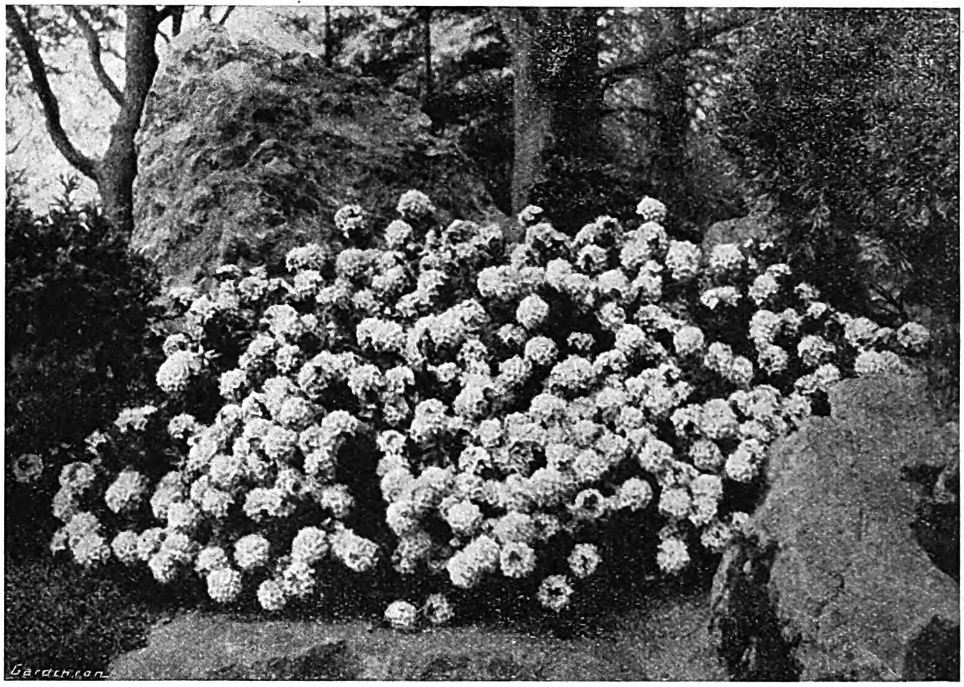


FIG. 143.—DAPHNE CNEORUM.

SPIRAEA DISCOLOR.

Shrubs flowering in late summer are not so plentiful that we can afford to omit this example from our gardens; nevertheless, S. discolor (syn. S. ariaefolia) should not be planted unless there is ample room for its proper development, since it will grow into a big, spreading bush eight or ten feet in height, and as much through. It is preferable to grow it as an isolated specimen (just as Berberis stenophylla should be), so that its long shoots may effectively display their creamy plumes without being fettered by obstructive neighbours. A wise gardener, too, would take care that a darker background was present to augment the beauty of this shrub —Conifers or evergreens used as windbreaks are excellent for this purpose.

For approximately a century the name S. ariaefolia has been in common use for this shrub, but so far back as 1830 John Lindley expressed his dissatisfaction that this group should be included under Spiraea, since it differed from that genus both in habit, foliage and fruit—in the latter character the carpels are one-seeded in the plant under notice, but several-seeded in most Spiraeas. In American text-books, the recognised name is Holodiscus discolor var. ariaefolia; in the type the leaves are whitish-tomentose beneath, but in the variety ariaefolia, grey-green and pubescent. Whether this rather cumbersome title will ever come into use in this country is another question; but it would appear, at all events, to be botanically correct.

The easiest method of increase is by hard-wooded cuttings, taken in late October or early November, and inserted either in a sheltered spot outside, or under the protection of a cold frame; in either case they will root readily, and growth is rapid when they are planted out into their permanent quarters. As regards soil, this Spiraea is not particularly fastidious, provided the site is well-drained, but the flowering qualities are often better in a poor, rather than rich soil. In pruning, which may be carried out in November, first remove all weak growths, then the old flowering wood, provided there are sufficient young shoots to replace this; if not, then merely spur back each lateral shoot to within one inch of the base.

S. discolor is a native of western North America, including British Columbia and California, and was originally discovered by Menzies; it was introduced, however, by Douglas, about 1827. It is figured in the *Botanical Register*, t. 1,365, and there is a supplementary plate, depicting a large specimen, in *The Gardeners' Chronicle* for October 11, 1902.

OLEARIA VIRGATA.

From other members of the genus, O. virgata, together with its close relatives, O. Hectori and O. Solandri, stands quite apart in habit, foliage, and the manner in which the flowers are borne.

It forms a tall, slim shrub, growing to over twenty feet in height, and should therefore be planted towards the back of the border; there are usually several main stems arising from near the ground level, and from these a perfect shower of slender, graceful branches descends, so that its beauty is appreciated even in mid-winter. Frost seems not to affect it at all. The leaves are opposite, from a quarter-of-an-inch to one inch long, linear-oblong, spathulate at the tip, and covered beneath with a white tomentum; in the case of O. Solandri this tomentum is yellowish, while in O. Hectori the leaves are from one inch to two inches in length, with the veins distinctly marked.

The flowers are rather inconspicuous and not particularly attractive in any way; they are borne on short pedicels, either solitary—which is usually the case with young bushes—or in clusters; the white ray florets, from five to twelve in number, being the most obvious parts.

This shrub is a native of New Zealand, being found in both North and South Islands, and also in Stewart Island. In these habitats it seems to prefer damp or even boggy positions, but in cultivation it will thrive perfectly well even in very sandy soil in the open border; it will produce flowers when three feet high.

There is an excellent figure of it in Cheeseman's *Illustrations of the New Zealand Flora*, Plate 91, which depicts the branching and inflorescence of this unusual shrub. *B. O. M.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XVIII.—On the Threshold.

APRIL 21 was wet, and we spent the day in camp. On the following day I climbed the ridge, finding several Rhododendrons. The next two days I took short local walks in the valley, and on the 25th, our last day here, we went up to the top of the ridge, nearly 9,000 feet, from where we saw the divide ahead of us. Below our camp the stream was lined with subtropical forest, Tree Fern, Altingia excelsa, Elaeocarpus, climbing Bauhinia, and a fine species of Pentapterygium with flowers two inches long. So much emphasis is laid on Rhododendrons, and from the horticultural point of view rightly so, that one is apt to overlook the fact that there are a great many other genera and species of Ericaceae in these forests. Possibly there are as many species of Rhododendron as all other Ericaceae put together, and in sheer bulk, of course, there is no comparison; if all Rhododendrons were swept away, the effect would be monstrous, whereas if all other Ericaceae were wiped out, leaving only the Rhododendrons, one would hardly notice anything wrong. Even so, the smaller Ericaceae are a feature of the vegetation, and the botanist, at any rate, would miss them if they were absent. I collected over thirty species, distributed somewhat as follows:—Pieris about five species, Vaccinium about nine, Gaultheria nine, Pentapterygium five, Agapetes two, Cassiope two, Enkianthus two. Many of these were more or less familiar to me, some having been collected in the Seinghku valley in 1926 for the first time. Among well-known species were Pieris ovalifolia, Enkianthus himalaicus, Cassiope selaginoides and Pentapterygium serpens. Of the new species, few were out of the common; a Pentapterygium was noteworthy for its large leaves, and a Gaultheria for the blood-red colour of its breaking leaf-buds.

It was no great climb from our camp to the beginnings of the forest where the first Rhododendrons were met with—R. arboreum, R. dendricola, the 'Stamineum' and 'Big Bill.' A little higher up were at least half-a-dozen species of Oak, Magnolia rostrata as usual, Birch, and a new species of Engelhardtia, its small, Elm-like leaves furnished with drip tips. That such tailed leaves, although characteristic of tropical forests, are really a rain and not a temperate phenomenon is proved by their frequency in these temperate forests; species of Quercus, Ilex, Ficus, Engelhardtia, several Ericaceae, and other trees and shrubs displayed them.

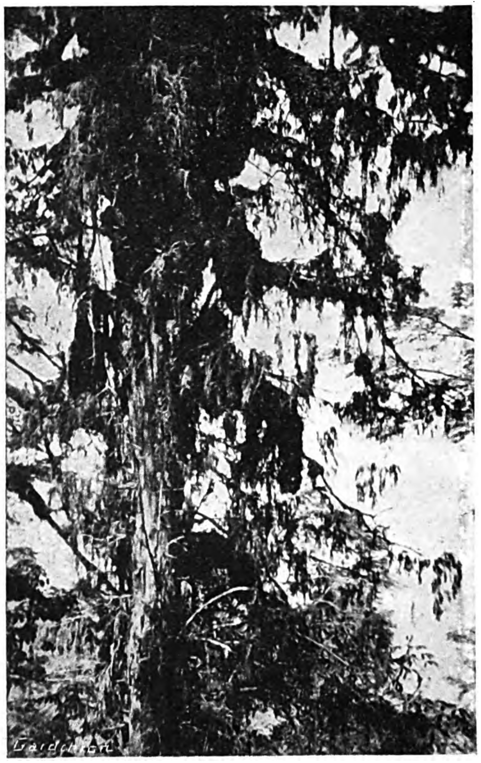

FIG. 144.—A HUGE JUNIPER FESTOONED WITH MOSS AND LICHEN.
Temperate Rain Forest, 9,000 feet alt.

The next forest Rhododendron met with was a small tree 'Neriiflorum' with waxy flowers of swarthy scarlet and small, oblong leaves, blue-grey with wax beneath. From the garden point of view, it was remarkable for the lasting quality of the flowers, dangling bells whose molten colour rings sharply against the cool glaucous alloy of the foliage. First seen in flower on April 22—and it must then have been open some days—it was still flowering merrily, elsewhere, in the third week of June. One particular bush I kept my eye on lasted three weeks, and that in spite of perpetual rain. From the botanical point of view, it was remarkable for the crimson-headed, glandular hairs on petiole, pedicel, and young growth. It is at home in the temperate rain forest, where its sleek, copper-red trunk and contorted branches are a familiar sight between 7,000 and 10,000 feet; but it is not likely to display its real worth before it is mature.

On a windy ridge were huddled together quite a collection of shrub Rhododendrons, one of the best being akin to R. aureum, but with paler flowers of a more refined yellow and leaves not deciduous. There were fine blobs of bloom on it, and although they lacked the hard glitter of R. aureum, this was not to their discredit.

Two first cousins of the 'Maddeni' family struggled in the tanglewood. One looked like R. Maddeni, the head of the house, but it had larger leaves. The squat, mahogany-red flower buds were tightly shut, and did not open until July, when the flowers recalled R. crassum rather than R. Maddeni. However, there should be plenty of three-year-olds of this fine summer, lily-white Rhododendron at home, since I collected it in the Di Chu valley in 1926.

The second was R. megacalyx, which was just coming into flower. It has become increasingly clear of late that the 'Maddeni' Rhododendrons, (among others) are not, individually, quite so restricted in their range as was believed when Hutchinson published his monograph of them then years ago.* Take R. megacalyx as an example. Since I first found it on the Burma-Yunnan frontier in 1914, I have collected it as far north and west as the Tsangpo gorge in Tibet, in 1924, and at two intermediate points, giving it a continuous distribution from the eastern Himalayas practically to Yunnan. Other species also have since been found wandering beyond the bounds then assigned them—R. Lindleyi, R. Nuttallii and R. dendricola, for example. R. megacalyx is without question a grand plant, and when I saw it in full bloom again at the end of May, with six-flowered trusses, I ranked it as high as anything in its class. Unfortunately, it is tender, at least no hardy form of it has been collected yet. The Delei valley form (and for that matter the Seinghku valley form) promises to be as hardy as any, coming from 8,000 feet; but delicate health is constitutional rather than typographical. The Burmese form, and also, probably, the Tibetan form from the Tsangpo gorge, both brought up in the lap of luxury, are likely to be expunged from the open in Britain. But, like R. Nuttallii, R. megacalyx will survive under glass by sheer merit.

Rhododendron bullatum—or its double—also grew here, but the flowers were over. By far the best of the smaller bush species, however, was a chrome-flowered 'Boothii,' which carried a neat head of vivid yellow, red-anthered blossoms, whose dazzling complexion more than compensated for an awkward figure. It is a leggy stripling, as shrubs which pull out of the struggle and betake themselves to sun-baked rocks, there to mope alone, are apt to be; the leaves, too, are odd-looking, hairy, dark green above, and wine-purple below. At first glance they appear to be only hairy, the petiole fairly bristling, the margin with long, curly hairs; but closer inspection shows that the under leaf surface is, in fact, densely lepidote as well as hairy, each scale sunk in a deep pit, for which reason these scales are overlooked until the surface is examined under a lens. This is one of the best and brightest yellow-flowered Rhododendrons I have ever seen; if it proves hardy, as it well might do, and keeps a trim figure, it ought to go far.

But to the botanist, this species is chiefly of interest for the great cunning it displays in the cross-pollenation business; it is, indeed, a crossword puzzle of high artistic merit, and it took me some time to solve it. If it does not ensure cross-pollenation it certainly deserves to. The contrivance is as follows. The corolla is flattened, and stands on edge, that is, more or less parallel to the pedicel. The three upper or posterior lobes are spotted with mahogany and have broad bands of pubescence reaching from the base of the shallow tube half way up the limb. The ten stamens are about equal in length; nine of them form a continuous pallisade around the front and flanks of the ovary, the filaments being hairy for less than half their height, the long hairs interlocking, thus further barring access to the ovary in this direction. The uppermost or posterior stamen is free, being kinked below and bent backwards against the limb of the corolla; its filament, too, is hairy, but all the way up instead of only half way, and the filaments to right and left of it are rather more hairy than the remaining seven, these three posterior filaments being in close touch with the three bands of pubescence on the corolla. The isolation of the tenth stamen is neatly effected by a posterior swelling on the disc, the filament which springs from its base having to bend outwards and over the lump, thus leaving a tiny passage on either side through the staminal fence; honey is secreted by the disc, between the staminal fence and the ovary, *only* on the posterior side, and is squeezed through the two lateral ports one on either side of the posterior stamen, where it is freed from the rest of the ring fence. Finally, the short style is bent sharply down and tucked through the front portion of the fence. If this description of the structure is clear, the *modus operandi* is easily followed. We have a flower (1) in which insects (in all probability bees), or birds, are lured by marks to a particular spot, where they can find honey; (2) in which stamens and pistil are kept well apart. The three posterior stamens trail their pollen chains over the pubescent bands, where they are entangled, and where insect or bird, seeking honey at the base of the posterior stamen, cannot fail to pick them up. The first object presented to any visitor, however, is the butt of the stigma projecting through the pallisade in front—for, remember, the flower stands in the vertical plane; so if everything functions properly, cross-pollenation must result. Finally, it is possible, although of this I have no proof, that if the cross fails, the anterior stamens may drop their pollen chains on to the languishing stigma beneath, which is, at any rate, directly in their way. *F. Kingdon Ward.*

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; and March 2, 16, and 30, 1929.

* "The Maddeni Series of Rhododendron," by J. Hutchinson, F.L.S. *Notes* from the R. B. G., Edinburgh, July 1919.

PROBLEMS OF PLANT LIFE.

I.—Do Plants Possess Nerves?

The intensive study of plant-life is calculated to develop a feeling of reverence and wonder. He who is on most intimate terms with flowers and trees often feels that he must, like Moses by the Burning Bush, remove his shoes from off his feet. The place is holy ground. The mystery of the "Bush which burns yet remains unconsumed" is but a symbol of all life's mysteries, alike in the vegetable kingdom and in the animal. One comes to share the view of Wordsworth who held that every flower enjoys the air it breathes. To treat even a bloom from the hedgerow ruthlessly seems to be an act of sheer brutality. Life is a sacred thing, even although it be but the life of a Daisy; and he who cultivates a feeling of reverence for a thing so full of mystery has partaken of something that is sacramental. Tenderness nurtured in the garden will be reflected in the home; he who loves his plants would hardly be harsh to his children, and he who stands by in reverence at the sight of an opening bloom will be likely to treat his fellow men with courtesy and respect.

As the result of recent research, many new facts in relation to the life of plants have been brought to light, and it may be of interest alike to the practical gardener and to the student of theory, if I devote a paper or two to the more interesting and important of these results. It often happens that an investigator alights upon a fact which suggests a new line of thought which for one reason or another he is unable to follow out. He makes a passing reference, suggests what he thinks might be discovered if the subject were pursued, and thus sows the seed which sooner or later may germinate and bear fruit in the life-work of another student. Almost every great discovery has been foreshadowed more or less dimly or clearly long before it has been really made. Ages ago men held that plants sometimes acted as if they had reasoning powers. They responded to various stimuli, were capable of acting intelligently, showed a determination to act in a given way when attempts were made to force them against their will, and were even held to manifest a sympathetic relationship towards human beings, so that they drooped and died if their patrons were taken ill, or revived when health and prosperity abounded.

All this might be regarded as utterly unscientific, and was put down as folklore; but as observation became more exact, and experiments were brought to bear, facts emerged which led scientific men to think that plants did indeed possess powers akin to those of animals, and might even be endowed with nerves. Perhaps their heart-beats might be counted, their pulses felt, their reasoning powers studied, and a new psychology built up as the result.

One of the first biologists to give these ideas expression in scientific form was the famous Swedish chemist Berzelius (1779-1848). In his laboratory at Stockholm he was able to carry out some investigations which were in after years to bring him world-wide fame. His chemical researches, however, led him on to the study of the phenomena of life, and he argued thus:—The phenomena of animal life are distributed between two systems, the more important of which is represented by the nerves. The conditions which enable the animal to live depend on the other system, for which he had no definite term.

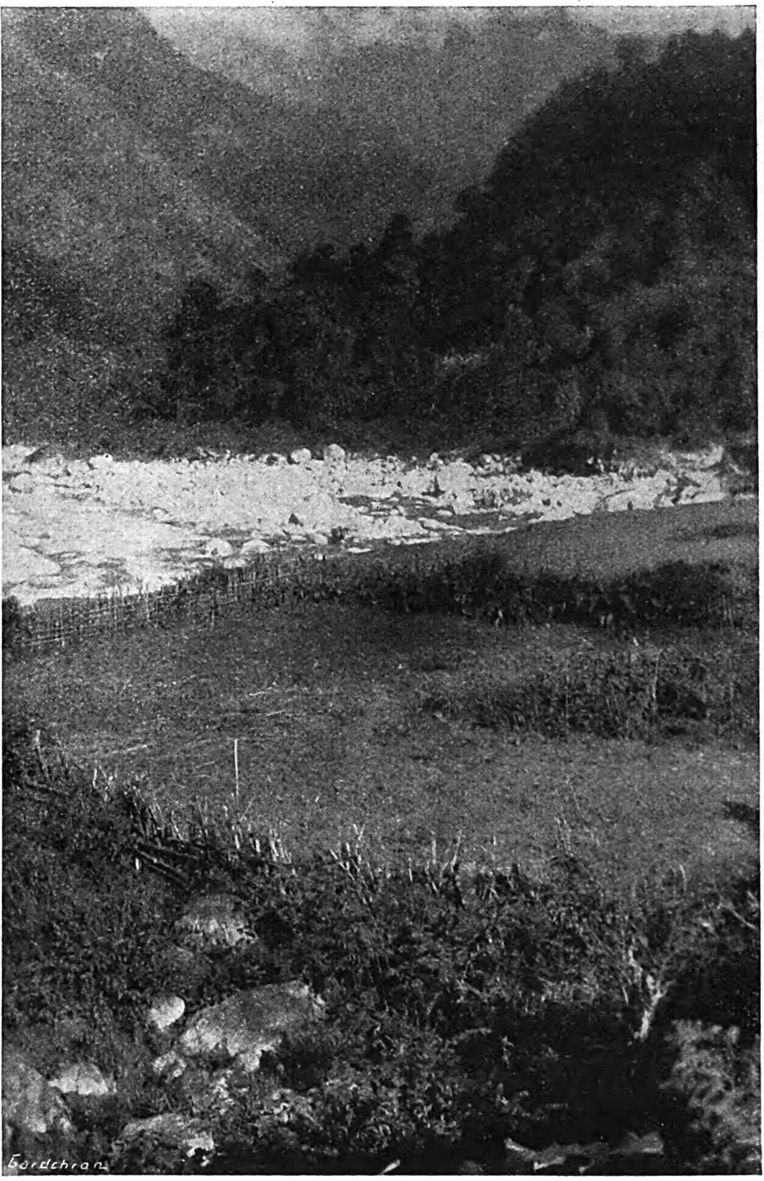

FIG. 145.—TROPICAL FOREST IN THE DELEI VALLEY.

Now the same system sets forth the difference between the organic and the inorganic. The inorganic is destitute of nerves, the organic is endowed with them; and since plants are organic they, like animals, must possess a nerve-system. This system, however, was still unknown. We may find a serious flaw in the logic if we are so disposed, but our business is to show that this careful biologist was convinced that plants had nerves. Berzelius hesitated to state what were the functions of the nervous system, and had a horror of theories and hypotheses. He was content to observe and study the facts of life and leave their interpretation unattempted until fuller knowledge enabled the student to see their meaning and purpose. The position is commendable, but one may be too conservative; and everyone is aware that while a false theory may do immense harm, much good has resulted from adopting an hypothesis as a basis for further research.

Berzelius, then, about the beginning of the nineteenth century, advanced the idea that because plants were organic they must be in possession of a nervous system. At the beginning of the twentieth century this idea was taken up in earnest, and made the subject of most careful experiment and investigation. How far Sir J. Chunder Bose was influenced, directly or indirectly, by Berzelius' views we cannot tell. He makes no reference to his great predecessor in the fascinating account of his researches which he has recently published under the title *The Motor Mechanism of Plants*, but we must not on that account withhold from the former his due.

In the volume I have just named the famous founder of the Bose Institute in Calcutta summarises the results of his researches on the movements of plants which have been appearing from time to time during the last twenty years, and we have here not only reference to the visible external movements which occur naturally or under the action of various stimulants in the laboratory, but also to the invisible internal movements which are constantly going on, as, for instance, in the propulsion of the sap. This really remarkable volume, which is very fully illustrated, shows that the mechanism of plants is exceedingly complex and wonderful. By experimenting in the first place on such responsive plants as the Mimosa and Desmodium—plants which have for many years claimed a large amount of attention on the part of botanists and biologists—he was able to push his investigations into other fields, and show what he calls the heart-beat of a plant by means of the rhythmical contraction of the cells. By the use of drugs, plants are made to droop or revive exactly as would any patient in the animal world. Changes of heat, light, moisture and electrical discharges were used with amazing effects, and we have the author's assurance that his results have been confirmed by scientific authorities whose credentials are beyond dispute.

The net result of Sir Chunder Bose's researches may be stated to be that there is no physiological line of cleavage between animals and plants. The volume is therefore at once a testimony to the truth of evolution, and a particularly valuable aid to the study of animal and human—so well as of plant—physiology. Experiments on men and dogs, even in the interests of human well-being, may be regarded by some as unjustifiable, and vivisection will always have its opponents. There can, however, hardly be any objection at present to the use of plants for experiments intended to determine the nature of the nervous system, the mechanism by which movement is directed, and the methods by which life is maintained and rendered effective. I think it may safely be conceded that some plants at least possess nerves. That they are in every respect like our own is, however, not to be admitted so readily. *Hilderic Friend.*

(*To be continued.*)

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

A rough estimate may now be formed of the injury inflicted upon trees and shrubs by the rigours of the past winter. The full extent of mischief among herbs will not be apparent until later. It is remarkable that, although in this maritime district no more than 12° of frost was registered, many shrubs which had passed unhurt through far lower temperatures in former seasons have been badly disfigured, and in some cases killed, in this one. This seems to be the result of the long duration of frost, accompanied by violent east and north-east winds in February. Several species of Cistus have been killed outright. Even C. cyprius and C. laurifolius, which I have never known to be injured in former years, have had their foliage browned where exposed to the wind. Much havoc has been wrought upon some varieties of Veronica speciosa, but V. Traversii and V. salicifolia remain unhurt. Drimys Winteri and Genista hispanica are severely scorched, but will recover; the foliage of Tricuspidaria lanceolata is discoloured in places, but the flower buds, which I have known to be destroyed in former winters, remain quite fresh. Eupatorium Weinmannianum seems past praying for. Tall plants of Myrtus Luma have been disfigured where the wind caught them, which I have never known happen before. Senecio Hectori is a very sorry sight, its great leaves hanging lifeless, but they will be replaced from the young buds which are still fresh; and Senecio Huntii has suffered no harm. Large bushes of Hypericum patulum have been badly cut, but the varieties Henryi and Forrestii remain unhurt.

Among shrubs of more or less doubtful reputation for hardiness, the following have suffered no injury whatever in the open ground: Desfontainea spinosa, Pieris formosa, Leptospermum scoparium (with its variety Nichollii), L. ericoides and L. pubescens, Rhaphiolepis japonica and R. Delacouri, Abutilon vitifolium, Lomatia ferruginea, Eucryphia cordifolia and its Nymans hybrid, Olearia semidentata, O. nitida and O. insignis, Gaya Lyallii, Cordyline australis, Styrax Obassia, S. Helmsleyanus and S. japonicus, and Griselinia littoralis; the last-named is really remarkable as a vivid evergreen, never flinching from the blizzard.

So much for shrubs in the open. Among those against walls Feijoa Sellowiana is badly discoloured; next to it on one side, Helichrysum rosmarinifolium seems defunct, while on the other side Billardiera longiflora remains quite happy, having carried its shining purple fruits right through the winter. Myrtus communis is a sorry sight, but is not seriously hurt, and the same may be reported of Abelia floribunda; both having suffered from cruel winds. Two plants of Rhodoleia Championi were killed in the open during the winter of 1927-8; but a third remains quite vigorous on a south wall, having been protected by a screen during the frost.

Among Rhododendrons, we have no losses to record; indeed, the prolonged cold has proved a protection to those species which are dangerously prococious in growth. The promise of flowers on most Rhododendrons is indifferent this year; R. decorum, R. oreodoxa, R. Fargesii, with the "Triflorum" and "Heliolepis" series being notable exceptions.

If these notes should catch the eye of a lady who, in her bounty, sent me some Gloxinia tubers about a month ago, will she kindly understand that the only obstacle to my returning thanks for the gift direct is that the letter which accompanied it did not reveal her address. *Herbert Maxwell, Monreith.*

SOME APRIL-FLOWERING ANEMONES.

That delightful plant, Anemone blanda, has been so retarded this season that it is only now (early April) coming into its best. This means that instead of being over before the A. nemorosa clan and others make their appearance, it has added the charm of its peculiar brightness to the main display of the woodland Anemone season. A. blanda is such a delightful thing in all its forms that one hesitates to make comparisons between the latter, but the dark blue, almost violet, varieties are especially appealing. A. b. var. scythinica, with white flowers stained on the reverse with deep blue, is also distinct and choice, and then there is A. b. var. rosea whose long, narrow rays are a fresh pink. In striking contrast to some groups of these in a sunny woodland corner is A. Seemannii (intermedia). This, I am told, is a hybrid between A. nemorosa and A. ranunculoides. It is an Anemone of much daintiness and the finely-cut foliage, being a deep bronzy-green, makes an attractive setting for the delicate loveliness of the soft primrose-yellow flowers

If the blue forms of A. nemorosa do not attain the intense brilliancy of A. blanda, they are not less enchanting in their tender shades of lavender-blue, in which direct sunlight will nearly always betray a hint of pink. A. n. var. Allenii is still, I think, the best of these blues. It is an exquisite subject for a partly-shaded woodland retreat, the conspicuous wreath of yellow anthers being in delightful harmony with the blue of the broad sepals. All of this class, of course, have their golden centre, which is so effective, and A. n. var. Robinsoniana, another large-flowered one, rivals the above in its gracious beauty, as well as in size. Still bigger in the blossom is the later, A. n. var. Blue Bonnet, with enormous, clear blue-lavender flowers of wonderful substance, and there are many others, not forgetting the little, pale-blue and rosy Welsh forms of the wild type which are plentiful in some mountain pastures and not less entrancing in the woodland garden. A. n. var. alba plena, a double-flowered development, is always worth a choice place, as is A. n. var. bracteata plena with its double white blossoms and curious green bracts.

Of the same kinship as the above is A. trifolia, and among the white-flowered dwarf Anemones I know of none more useful and pretty than this little European alpine. It grows about eight inches tall, and its bright green leaves, which are broader and less cut-up than those of our native Wind Flower, afford an attractive setting for the firm, milky-white stars which are about an inch across. Growing in dense colonies and naturalising freely, this species is one of those happy plants which take care of themselves and carry-on indefinitely, gathering increasing beauty year by year.

A. ranunculoides, which appears to be allied to A. nemorosa, is also a European sub-alpine with an attraction of its own. It does not exceed four inches in my light loam, nor does it spread with the hearty vigour of the preceding. But it is a dainty little plant with flowers of a good yellow, and there is a semi-double variety. This species, like most others, varies considerably in size and colour, so that it is always worth while looking-out for forms which have broken away from the family tradition and developed a quality of their own.

Some seedlings of A. Pulsatilla, the parent plant having flowers of a rich violet-purple, are giving an attractive assortment of colours ranging from a washy lavender to deepest violet, and from a pale lilac to a rich blood-crimson. These all do well in very poor soil, mostly stones and grit, and under such conditions even our humid westerly winters are not resented. Yet A. Halleri, with similar treatment, cannot be relied on as a permanency, nor can the elusive A. P. var. Mrs. van der Elst. A. sylvestris is another spring-flowering species which has been a disappointment. It is perfectly easy to grow in some gardens, but will not be comforted in this one, no matter how ideal the soil and position may seem.

A. vernalis is the trump card of these April Anemones here, and it is as good (in dry moraine) as it is beautiful. Long-lived, perfectly hardy, pest-proof and endowed with a dozen more excellent qualities, the "Lady of the Snow" is a plant of strange and magnetic attraction. Perhaps the flat rosette of bronzy, rather weedy-looking leaves may to some extent serve to emphasise the peerless beauty of the flower, but the latter has an intrinsic loveliness which no accident of contrast could embellish or defeat. The tawny, iridescent fur which envelops the stem and backs the outer parts of the sepals is more vital and colourful than the shaggy silk of A. Pulsatilla, the inside of the chalice more chastely beautiful with its shell-gleam whiteness and eye of gold. This arresting plant, high alpine that it is, does not only flourish year in and year out with the best of goodwill under cultivation, but it sets any quantity of seeds. These, moreover, are easily germinated, and the seedlings demand no special care.

Among the many other April Windflowers which might be mentioned here, A. apennina is one that cannot be omitted. This is a very precious species for the woodland or grass land, since it naturalises so freely under favourable conditions, and there is nothing lovelier in the spring garden than its brilliantly blue, Daisy-like flowers in association with Daffodils and Primroses. Although A. apennina takes so willingly to our climate that it has made some claim to be regarded as an adopted member of the British flora, it does not do well in my shaley loam. This is probably more the fault of dried tubers than of the plant itself, and I am cherishing the prospect of some day being able to get it agoing by planting the active roots before the foliage disappears in early summer. *North Wales.*

DISEASES OF GRASSES.

Some Observations on Epichloe typhina, (Fr.), Tul.*

Epichloe typhina (Fr.), Tul., is an Ascomycete fungus which causes a disease of wild and cultivated grasses. The popular name "choke" aptly describes the symptoms. Early in May, infected plants show white patches of mycelium and conidia on the largest tillers. These tillers are potentially fertile, but the panicle fails to emerge since the enclosing leaves of the shoot are firmly bound together by strands of mycelium. Infected plants are often completely barren by reason of the "choke" disease. The disease is therefore of first importance when grasses are grown for the purpose of seed production or for experimental study. A large collection of different strains of Cocksfoot (Dactylis glomerata) growing at the Welsh Plant Breeding Station, Aberystwyth, has suffered severely, over fifty per cent. of the plants being attacked in 1927.

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* Abstract of a paper by Miss K. Sampson, read before the British Mycological Society on March 16.

During the summer, the colour of the fungus changes from white to yellow, and finally to brown, the mycelium mass thickens, and perithecia are developed. The thread-like ascospores are shot out and are capable of immediate germination. By the end of August the perithecial stroma dries up or decays, and until May comes round again the plant shows no external symptoms of the disease.

Microscopical examination of the leaves and stems during the winter months reveals the slender, septate mycelium of the fungus running between the cells. It is not surprising to find, therefore, that vegetative propagation of the host results in a multiplication of the parasite. One experiment carried out at Aberystwyth may be quoted. An infected plant of Cocksfoot was broken up in order to give the greatest possible number of new plants. Among the 287 plants which were produced, only one was found in the following season to have escaped infection. This shows how extremely wide and uniform is the distribution of mycelium in the host.

Red Fescue (Festuca rubra) is included among the eight species of Gramineae which have been from time to time attacked by "choke" in the neighbourhood of Aberystwyth. It has received special study because it presents certain features which are of peculiar interest. In this case the panicles are only rarely trapped in the sheath by the fungus. Normally they emerge, and frequently they carry aloft the white conidial stromata. A single infected plant often produces fertile tillers with trapped panicles, panicles which are exserted but are wholly or partly destroyed by the fungus, and others which show no visible sign of attack. Seeds were collected from several plants of this type in 1923 and 1924, and families including in all over a thousand individuals have been under observation during the past five years. Every family which came from an infected female parent showed a considerable amount of the disease, the number of individuals attacked by Epichloe varying in the different families from eighteen to ninety-six per cent.

Microscopical examination has again revealed the parasite in the vegetative organs. Typical slender intercellular mycelium has been traced from these up the flowering stem and into all parts of the flower. It has been found in the pales, the filaments and anthers, the ovary wall, the integuments, and in the nucellus of the ovule. Mycelium is abundant in the ripe grain of infected plants, occurring for the most part immediately outside the aleurone cells. It occurs frequently round the embryo, and it has been seen in the first leaves of seedlings germinated in the laboratory, and in the older seedlings grown outside in experimental plots.

It is evident, therefore, that when Epichloe typhina occurs on Red Fescue it can be transmitted by infected seeds. The experiments indicate that infected plants rarely produce individuals which are free from the infection, although external symptoms of the disease may not be developed for several seasons in succession. In other words, it is possible to find a plant of Red Fescue which is superficially quite healthy, but which, under the microscope, is found to be invaded by mycelium. A plant of this type suggests a close and interesting parallel to the endophytic fungus of Darnel (Lolium temulentum).

In conclusion, it may be stated that Epichloe typhina is undoubtedly a parasite. In addition to the wholesale destruction of the inflorescence, the adverse influence of the fungus on Red Fescue is shown in the number, weight and viability of the seeds produced by infected plants. The influence varies in intensity from plant to plant, but it is evident not only in plants showing visible symptoms of the disease, but also in those which contain only the hidden mycelium. *J. R.*

NOTICE OF BOOK.

A Book on Lilacs.

In a key to the species of Syringa contributed to this work* by Mr. A. Rehder, he admits twenty-eight species. It is not often that a genus of this size, of almost purely horticultural interest, and presenting no special botanical problems or cultural difficulties, has had devoted to it a volume so large and so sumptuous as this. Mrs. McKelvey must be complimented on having done her work with absolute thoroughness. The mere references for instance to the first species with which she deals, S. Emodi, fill more than a quarto page; the whole discourse on it occupies ten pages, and is illustrated by five full-page plates. The article on S. Josikaea fills thirty pages. It follows that every aspect of the genus Syringa—historical, botanical and horticultural—has been fully explored, and it is difficult to imagine that anything further of value remains to be written about the species and varieties known to exist at the present time.

The genus as a whole is clearly divisible into two main groups. The first is the section Ligustrina, or Privet-like Lilacs, which consists of three species—S. amurensis, S. pekinensis and S. Fauriei. (The shrub or small tree we have known and cultivated in this country as S. japonica is, in this work, reduced to a variety of S. amurensis). They have small, Privet-like, white flowers, the tube of whose corolla is shorter than its lobes. The second and more important section consists of the true Lilacs (Eusyringa), whose flowers are mostly lilac, pink or purple, and whose corolla has a tube much longer than its lobes.

The true Lilacs are again divisible into two groups, one of which is typified by the common Lilac, S. vulgaris; in this the shoots do not form a terminal bud, and the leafless flower trusses come from lateral buds of the previous season's growth; the other, represented by S. Emodi, S. Josikaea, etc., produces its flowers from a terminal bud on a panicle leafy at the base.

Mr. E. H. Wilson contributes a chapter on the history and distribution of the genus, and gives, in particular, a very interesting account of the Persian Lilac whose real home, he informs us, is not Persia, as the specific name would imply, but the Chinese province of Kansu, a region "traversed by one of the great highways which the ancients used to journey across the heart of Asia." It was by this highway that the Persian Lilac is assumed to have reached Persia.

The great bulk of the book we owe to Mrs. McKelvey's wonderful industry. What it must have cost her in time and patience it would be difficulty indeed to calculate. She has apparently searched every botanical and gardening book of any standing that has been written in English, French, German, Italian and Latin, and extracted from them everything of botanical and horticultural interest concerning her subject.

Of the common Lilac and its history she gives a very fascinating account, and of apparently every one of its numerous varieties a description and history, so far as it could be ascertained. To it alone nearly two hundred pages have been devoted, sufficient in itself to constitute a volume of moderate size. A chapter on cultivation and forcing is contributed by Mr. T. A. Havemeyer, and one on diseases and insect pests by Dr. W. T. Councilman.

The book is illustrated with one-hundred-and-seventy-two full-page plates, the majority of them process reproductions of photographs taken in the Arnold Arboretum, where the collection of Lilacs—both species and varieties—constitutes an admirable and prominent feature. Of many species, five or six figures are given representing the winter buds, the expanding buds, the flower truss and foliage, and the entire plant in blossom, fruit, and bark. With all this, Mr. Rehder's key and the author's very full descriptions, it must surely be a dullish intellect that fails to distinguish any species in cultivation. In order that the colour descriptions may be correctly appreciated, Mrs. McKelvey has provided four colour charts based upon Ridgeway's *Colour Standards and Colour Nomenclature*. When, therefore, the student encounters such colour terms as "vinaceous purple" or "chalcedony yellow" he is able by reference to these charts to ascertain the identical shade meant.

We can only conclude by congratulating the author on producing a work of such learning and infinite research which is likely long to stand alone and unapproachable as an example of completeness in a monograph of its kind.

THE GENUS PRIMULA.

(*Continued from p.* 266.)

MERRILLIANA (Schltr.). Merrill's P.
(Pinnatae.)

A REMARKABLE, deciduous, perennial species with a rosette of thin, smooth leaves, one-and-a-half inch to two-and-a-half inches long, including the stalk, with pinnatifid blades like those of a Carrot; the numerous lobes are oblong in shape, more or less oblique, and edged with coarse teeth or small lobes. Flower stem erect, slender, slightly downy, two-and-a-half to four-and-a-half inches tall, bearing an umbel of two to five blossoms, on short stalks sparsely clothed with fine hairs. Corolla tubular, about half-an-inch long, divided almost to the middle into five broadly oval, blunt, slightly oblique lobes about a quarter-of-an-inch across; tube cylindrical below, dilated above the middle, about a quarter-of-an-inch long. Not in cultivation.

This species is a native of Anhwei, in eastern China; the colour of its flowers and the conditions under which it grows have not been recorded.

Culture: Conditions as for P. Filchnerae would probably prove suitable.

METRIA (Balf. f.). Pumthang P.
(Soldanelloideae.)

A dainty, low-growing perennial species with small rosettes of oblong, oval, elliptic or nearly heart-shaped leaves, blunt or rounded at the tip, abruptly or gradually contracted into a wedge-shaped stalk, in all from one to one-and-a-half inch long; margins furnished with rounded, regular teeth; both surfaces densely covered with minute, jointed hairs. Flower stem about two-and-a-half inches tall, downy, bearing a short, erect, capitate spike of pale blue or white, deflexed, stalkless flowers. Corolla about five-eighths-of-an-inch long, funnel-shaped, divided to the middle into five wedge-shaped, truncate, slightly cleft lobes, internally covered with minute, glandular down; tube cylindrical, about a quarter-of-an-inch long, smooth outside, downy within. Flowers in June.

Grows in damp, shady places in Bhutan, in the eastern Himalayas, in Champa Pumthang.

Culture: Peat, friable loam and sand, in a cool, shady spot, with protection from damp in winter, are indicated.

MEYERI (Rupr.). Meyer's P.
(Vernales).

This desirable deciduous perennial is a subspecies of P. amoena (Bieb.). It produces a tuft of more or less oval leaves two to five inches long, blunt at the tip, almost heart-shaped at the base, abruptly contracted into a winged stalk; margins edged with blunt, rounded, regular teeth; upper surface smooth, underside at times hairy on the nerves. Flower stem three to seven inches tall, bearing one to three reddish-purple blossoms. Corolla about three-quarters-of-an-inch across, with broadly oval, lightly notched segments; tube cylindrical, about five-eighths-of-an-inch long.

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* *The Lilac*, by Susan Delane McKelvey. 1 Vol. 4to. The Macmillan Co., New York. Price £3 15s. nett.

Grows in cool, shady places in the central and western Caucasus, at 6,000 to 12,500 feet above sea-level.

Culture: Fibrous loam, leaf-soil and sharp grit, in a cool, moist but well-drained spot, are the conditions required.

MICRODONTA (Franch.). Moonlight P. (Sikkimensis.)

A very beautiful, deciduous species exceedingly variable in the tinting of its blossoms. The short rootstock produces a rosette of almost smooth, somewhat leathery leaves with broadly oval blades, gradually tapering to long stalks, in all two to nine inches in length; margins toothed. Flower stem from nine to thirty-six inches tall, bearing one, or from two to four superposed umbels of fifteen to twenty, usually nodding, very fragrant blossoms varying from pale yellow to white, sometimes tinged with violet, and powdered with white meal in the throat. Corolla about three-quarters-of-an-inch across, with rounded, notched lobes; tube funnel-shaped, much longer than the calyx. Flowers in July and August.

Grows in shady bogs and on the margins of mountain streams, in south-eastern Tibet, at 11,000 to 12,000 feet above sea-level.

Var. alpicola (W. W. Sm.). Plant twelve to eighteen inches tall, flowers pale primrose-yellow, dusted with white meal in the throat, fragrant. Flowers in June. South-eastern Tibet, Temo La, at 13,000 to 14,000 feet.

Var. alpicola forma micromeres (W. W. Sm.). A high alpine form with sulphur-yellow, fragrant blossoms. Flowers in July. South-eastern Tibet, Sang La, at 14,000 to 15,000 feet.

Var. alpicola forma violacea (W. W. Sm.). Plant twelve to twenty-four inches tall, flowers violet-purple or wine-coloured, powdered with white meal in the throat, very fragrant. Flowers in June. South-eastern Tibet, Nyima La, at 12,000 to 14,000 feet.

Culture: Good rich loam and peat, and treat as bog plants when in growth. *A. W. Darnell.*

(*To be continued.*)

ORDER OF FLOWERING AND POLLENATION OF FRUIT BLOSSOMS.*

The object of this paper is to show that observations of fruit blossoms and their insect visitors may be used as a guide in orchard planting and in the increase of the crop of fruit.

It is granted that many things are necessary in order to secure a good and profitable fruit crop; one naturally thinks of the need for healthy trees, efficient drainage, suitable soil, proper cultivation, freedom or protection from diseases and insect pests, kindly weather, especially at blossoming time, and, lastly, a remunerative market.

Botany, however, teaches us that the pollenation of blossom is well worth careful and thoughtful study, as without fertilisation fruit is not produced.

By pollenation is meant the transference of pollen grains from the anthers to the stigmas; the pollen grain there germinates, throwing out a pollen tube which travels through the style to fertilise the ovule, which then becomes a seed, around which the fleshy fruit forms.

Agricultural and horticultural research has devoted much of its energy to explaining why many good practices which have been long in existence are right (liming, for example). Our forefathers planted orchards of mixed varieties, whether it was of Apples or Cherries, and kept bees; recent research on fruit pollenation has proved that both were good practices.

The Arabs, certainly so far back as the time of Mahomet, cut pollen-bearing branches from the male Date Palms, carried them up the fruit-bearing trees and tied them among the branches for the wind to distribute the pollen. The Turks must have long known that without a certain little wasp they could not get a crop of Smyrna Figs. Probably neither the Arab nor the Turk would satisfy the botany examiner of London University as to his knowledge of fruit pollenation, but observation and experience have taught each a great deal, and it has been left for recent years to explain the facts in botanical terms.

In growing our common English fruits we get examples of wind and insect pollenation; self and cross fertilisation.

WIND POLLENATION.

Cob and Filbert Nuts, and Walnuts, each produce dust-like pollen which is carried by the wind to the female flowers; in each of these botanical observation has something to teach. To ensure a crop it is necessary that the pollen be shed at a time when the stigmas of the little Nut flowers are receptive. The catkin-bearing branches must not be pruned off before the Nut flowers are fertilised; some varieties do not bear many catkins, and in other kinds the time of pollen shedding and opening of the female flowers do not synchronise, so that it may be advantageous to have a few trees of another variety to assist the pollenation. The late Mr. George Bunyard recommended planting an occasional Cosford Cob through the Nut plantation, it being a variety that bears many catkins. Professor E. J. Wickson, of California University, has shown that for growing Walnuts commercially it is advisable to interplant several varieties, as in some sorts the pollen is shed too early or too late for the female flowers on the same tree. In the garden of an uncle at Sheldwich, Kent, there were two Walnut trees standing about ten yards apart; one was a soft-shelled Walnut, the other a hard-shelled form; he kept an account of the yield, and in twenty-nine years the trees bore 330 bushels of Nuts, which sold for £66 10s. (besides some kept for the house). I believe the good and regular yield was due to the fact that they were different varieties and cross-pollenated one another efficiently.

INSECT-POLLENATED FRUITS.

The Strawberry is pollenated both by wind and insects. Raspberries and Loganberries are self-fruitful and mature fruit perfectly with pollen of the same plant, but they need insects to carry the pollen. If insects are excluded from the blossoms, the fruit is imperfect and deformed. Hive bees are very fond of Raspberries, they undoubtedly increase the crop, and the Raspberry is one of the best plants for honey production.

Gooseberries, Red Currants and Black Currants all mature fruit perfectly with pollen of the same plant, but their pollen is glutinous, like minute grains of boiled sago, which clings together and cannot be transported by the wind, so they are dependent on insects to carry it from the anthers to the stigmas.

Where a large acreage of Gooseberries or Black Currants is grown, there may not be sufficient wild insects to visit the blossoms, and growers find that by placing hives of bees in their plantations they get more fruit.

FRUIT TREES.

In fruit trees, profuse blossoming does not necessarily foretell a large crop; weak trees sometimes flower excessively to the disadvantage of maturing fruit. Super-abundance of flowers apparently wastes energy.

In the case of Apples, Cherries, Pears and Plums it is found that the blossoms are practically entirely dependent on insects for fertilisation; experiments show that wind carries very little of the pollen from flower to flower. In these fruits a new factor comes in, viz., that a large number of the varieties will not mature fruit when pollenated by pollen of the same variety. A new variety is originated as a seedling and is propagated by budding and grafting on other stocks; consequently, the pollen is similar, whether it comes from the same flower, the same tree, or another tree of the same variety, although it may be growing at a distance.

Self-fertile or self-fruitful are terms applied to a variety that matures a considerable proportion of its blossoms into fruit with pollen of the same variety.

Partially self-fruitful means that only a small proportion of the flowers will mature fruit with pollen of the same variety.

Self-sterile is a term applied to varieties that will mature no fruit with their own pollen, or mature only perhaps one fruit in a thousand blossoms, and is, therefore, for practical purposes, self-sterile; there are varieties of Apples, such as Cox's Orange Pippin and Lane's Prince Albert, which in many trials have shown themselves to be self-sterile, although one flower out of 2,000 may eventually mature a fruit under glass.

Of Apples grown in the open about two-thirds of the varieties appear to be self-sterile, and no variety is sufficiently self-fruitful to plant profitably in a block alone.

About half the varieties of Pears are somewhat self-fruitful, but they are relatively less self-fruitful than Apples.

With Plums, about half are more or less self-fruitful and half are self-sterile, or nearly so.

Among Cherries, Morello is perfectly self-fertile. Flemish and Kentish preserving Cherries and May Duke are to a small extent self-fertile, but the Sweet Cherry varieties are all either absolutely self-sterile, or self-fruitful to the extent of only one or two per cent. It is, consequently, not surprising that there are Cherry orchards which year by year crop badly, especially as some varieties of Cherry are inter-sterile, *i.e.*, will not mature fruit with pollen of the other variety.

As cross-pollenation is shown to be beneficial in increasing the crop, it is necessary to ascertain that the varieties which it is proposed to plant together flower at about the same time; one should avoid planting early-flowering with late-flowering, unless there is a mid-season flowering variety which will pollenate both.

It may be stated that, provided the two varieties are in flower at the same time, the pollen of one variety is as good in the production of fruit as the pollen of another variety. In the United States, however, in experiments with Apples, some varieties were found to cross-pollenate better with the pollen of one kind, than with that of another. Personally, I believe there is a difference (especially in some of the shy bearing varieties) and that a variety may bear more fruit with one kind of pollen than with that of another. I think this may be more the case with fruit grown in the open than that grown in the more congenial glasshouse.

It is interesting to find that different varieties of the various fruits flower in a definite order, in the same way as the flowers of the countryside, where the Snowdrop is followed by the Aconite, the Crocus by the Hazel, Lesser Celandine by the Coltsfoot, Almond by Wood Anemone, and so forth; in like manner the different varieties of Pear, Plum, Apple and Cherry flower in fairly regular succession. In former days orchards were planted with a large number of varieties which mutually cross-pollenated one another, but in wishing to lessen the number of varieties and in order to grow a large quantity of a remunerative variety, some orchards have been planted with one variety only, or with two varieties that do not flower at the same time or, in the case of some Cherry orchards, with varieties that do not cross-pollenate.

Careful records of the order of flowering of Apples, Pears and Plums have been kept at six or eight observation stations in Australia for several years, and these records correspond fairly nearly with those kept in England; thus Black Diamond Plum flowers early and Pond's Seedling late; in Pears, Brockworth Park flowers the earliest, with Keiffer's Hybrid, while Williams's Bon Chrétien, Marie Louise, Glou Morceau and Beurré Capiaumont flower late, showing that the order of blossoming in Australia closely resembles that in England. In Australia, many more English varieties of Apples, Pears, Plums and Cherries are grown than in Canada and the U.S.A. One wonders why European varieties of Apples should thrive better in Australia than they do in America.

(*To be continued.*)

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* A paper read before the Royal Society of Arts, Wednesday, February 13, by Mr. Cecil H. Hooper, F.L.S., of Wye, Kent.; Mr. H. V. Taylor, O.B.E., Commissioner for Horticulture, Ministry of Agriculture, presided.

CYCLAMEN LIBANOTICUM.

I enclose a photograph (Fig. 149) of the rare Cyclamen libanoticum, of Siehe, described on p. 97 (February 9). It flowers in the months of February-March, and is very fine and fragrant.

In my former note, I forgot to mention Cyclamen maritimum, of Siehe, which is really a very fine form of C. graecum, with thick, dark green leaves, very sharply crenate-dentate. The flowers have ovate sepals and ovate-lanceolate petals, both very obtuse and even rounded. This flowers in autumn, and its colour is light rose. It was sent me by Siehe twenty-five years ago. *H. Correvon, Floraire, Geneva.*

HOME CORRESPONDENCE.

[*The Editors do not hold themselves responsible for the opinions expressed by correspondents.*]

The Control of Slugs.—Now that the season has arrived for the sowing of both vegetable and flower seeds, I wish to place before readers of *The Gardeners' Chronicle* my experience with regard to a British anti-slug preparation called Slug-Mort—which has recently been put on the market—in order that all may know of, and derive benefit from the use of it, as I have done. My experience was as follows. Last autumn I sowed Lettuce seeds in an early and sheltered border under a wall; no seedlings appeared. Upon investigation, I found the ground was full of slugs, which had penetrated the soil and devoured the seedlings immediately after germination. I then proceeded to make a second sowing, at the same time smothering the drills with Slug-Mort, mixed with bran in somewhat stronger proportions than advised in the directions, raked the soil level, and scattered more of the mixture on the surface. The result was a ninety-per cent. germination, and the crop grew away without any further attack from the slugs and no harm whatever to the vegetation. I have also used this preparation most successfully on Chrysanthemum stools in frames, the shoots of which were eaten off as fast as they grew. This exterminator evidently fills a long felt want and could, with advantage, be used in every garden and nursery in the country, as, besides being most inexpensive, it can be applied with safety, and a minimum of labour, large areas being covered at small cost. I am in no way connected financially or otherwise with the vendors of this article, but having found a really good thing, I think it only right that my fellow horticulturists should have an opportunity to share my knowledge of its efficiency, whereby valuable crops can be saved from destruction at an expenditure of a few shillings. *J. Muir.*

Storing Vegetables.—The severe weather recently experienced will long be remembered for the damage done to all growing crops, such as Broccoli, Savoys, Cabbages, etc. In this district, Evesham to Tewkesbury, the acreage of market gardens is very considerable, and here one may see the damage done and the loss entailed. It is really very pitiable to see the large fields of Cabbages which, under normal weather conditions, would have been fit for market, now looking, as the phrase goes, "like a hay field." In a good many cases the losses are from fifty per cent. to eighty per cent. killed; this means, of course, a great shortage of food. In November and December there was a glut of all vegetables. I know of acres of Savoys which were fed to sheep, or even ploughed in, because there was no market, and yet, in London shops, prices for these were high. If only there were better facilities for the growers to supply the consumer, or if there could be more control, and the profits better distributed, then the grower would work for production with the knowledge that he was able to pay his way. I have had considerable experience, including twelve years in Sweden, of storing all kinds of vegetables, and I consider it expedient to practice at least a part of the storing process in this country of fluctuating season and climates. Take, for instance, a late crop of Cauliflowers. If they were lifted and laid in thickly and covered with any light material, such as spoilt hay or straw, their season would easily be prolonged until December. Broccoli could also be lifted and treated in a somewhat similar manner, but with more protection, taking care to protect the stems. Dry leaves and Bracken would be ideal for this purpose, and—when obtainable—much cheaper. This lifting may seem unreasonable, but in private gardens where only a few hundreds are grown, it could be practised with ease and prove economical, and instead of having nothing except half-spoilt Greens, a regular supply of good vegetables would be maintained. Savoys may be cut and, when sufficiently dry, stacked or pitted in the same way as Mangolds, and will keep for a couple of months if not allowed to heat. Surely this would be better than allowing them to stay in the field or garden to rot, as was the case this season. I may mention here that another good point in this method is that the ground can be prepared for the next crop. It may be suggested that such sharp winters only come at long intervals, and the question asked—Why go to all this trouble? My answer is, that, like wars, they come, and it is good to be prepared. Not only the green crops, but also very large areas of Peas and Seville Beans are, or have been, ploughed in; this is very serious for the grower, who has been depending on these crops for existence, and the consumer will feel the pinch later on. *James Page, Showborough Villas, Strentham, Worcester.*

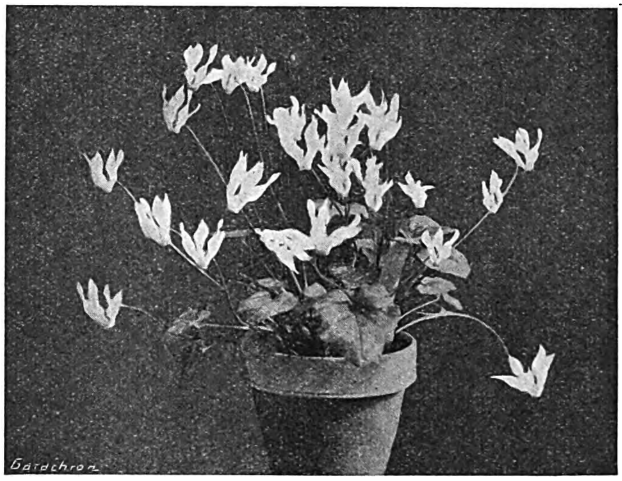

FIG. 149.—CYCLAMEN LIBANOTICUM.

Salix lanata var. Stuartii.—(See pp. 60, 107, 159, 208 and 231). Mr. J. Blades has introduced another Willow in discussing the origin and name of the above, namely, Salix Stuartiana, but that being well authenticated by figures and descriptions, there is no difficulty in explaining what it is. Sir James Edward Smith first described it as a species in the *English Flora*, p. 203 (1830). It is also figured in *English Botany*, tt. 1809, 2586, and in the second edition of that work, t. 1355. He had it from Rev. Dr. Stuart, who found it in the mountains of Breadalbane. This same gentleman sent several Willows to Smith, and I believe he was a son of the Rev. James Stuart, minister of Killin, Breadalbane, who died at the end of the eighteenth century. The son would therefore be familiar with Breadalbane. The same Willow was collected by Mr. W. Borrer at the upper end of the Finlarig Burn, a matter of two miles from Killin as the crow flies. Mr. D. Turner collected it on Ben Lawers, eight miles from the village. I collected it on Ben More, ten miles from the village. The botanist Griselin sent a specimen of it from Siberia to Linnaeus. The Willow in question is a very small, woolly-leaved form of S. lapponum, which I have labelled S. lapponum var. Stuartiana (Sm.) out of compliment to Smith. His S. arenaria was simply a greener, less hairy form of S. lapponum. These two so-called species are merely forms of a very variable Willow not now maintained. That is why Dr. Moss calls S. Stuartiana a synonym of S. lapponum. The S. lanata × lapponum referred to by him was the plant discovered and described by the Rev. E. F. Linton, and published in 1913. S. lanata var. Stuartii is a third Willow in the case, and is stated on good authority (p. 159) to have been originated by Dr. Stuart, of Chirnside, Berwickshire, who flourished in the 'nineties of last century. *J. Fraser.*

Rewards and Other Things.—If I were to exhibit at Westminster six vases, each containing twelve perfect flowers of a variety of Calendula or Tagetes, I might, if lucky, obtain a Banksian Medal, but if I had ten times as many of the same flowers nicely set out in "art" vases on black velvet, with "Asparagus Fern," I should probably get a Gold Medal. An exhibitor asked me "How can I secure a Silver-gilt Banksian Medal for my alpines?" My answer was, "You must have twice as many plants in twice as many varieties, and must introduce more richly coloured forms." And Violets! Their humility is at once their reward and their undoing. Orchids are a class to themselves and obey no law, with this exception, that the R.H.S. fortnightly meetings and other shows constitute the market where nurserymen display their wares for sale—wares cared for like Mr. Cochran's "young ladies." After all, the nursery is the best place in which to buy plants, and next to the nursery, the catalogue in the study. At a show, the perfection of the protected blossom is the snare into which one is led by the enthusiasm of your boy or girl friend. Nowadays, at shows, the exhibits are largely ordinary stock, plants which can be supplied in any quantity. New, rare, noteworthy and uncommon plants are naturally not shown by the trade until a sufficient stock has been worked up to supply orders. From 1830 to 1880 it was otherwise, because in the first place plenty of good plants were being discovered and, secondly, there was a limited demand. Something should be done to encourage the amateurs to show new and rare plants. The two-day show is a real difficulty to the private grower. He has the cost of a van for two days instead of one; he is deprived for a similar period of the services of his gardeners. Then, having sent up a collection of forty or fifty rare plants, he may, if fortunate, receive a Silver-gilt Medal, while the Gold Medal goes to Messrs. Cartons' 120-feet run of Balsams and Viscarias! Why do we never see exhibits from foreign countries? Orleans, Angers, Ghent, Bruges, Hanover, Erfurt, and Naples are towns where any day of the week one may meet the English retail or wholesale nurseryman looking around. But if Messrs. Barmorin are invited to put up an exhibit at Edinburgh or London, that same nurseryman begins to cry out. My good friends in the trade tell me that foreign countries put so many difficulties in the way of English exhibitors that the latter must retaliate to secure reciprocity. Surely, however, this is the task of the admirably organised H. T. A., and is not the concern of the R.H.S., who should aim at getting all new, rare, or noteworthy plants at their meetings, irrespective of origin. There are a few questions I would like to put to the trade. Why is it patriotic to buy from abroad, via a middleman, and unpatriotic to buy direct? Is not the stock on which a Rose is budded more important than the country in which it is grown? I remember seeing an old nurseryman in a southern suburb of London chopping up clumps of Phloxes—received from Holland and for which he had paid 30s. a hundred—into five and six plants to be retailed at 8d. each! However, all is well in the best possible of worlds if you cultivate your garden and, as they say where vegetables are shown in competition, pick out the cork from the Cauliflowers! *William Lawrence.*

FOREIGN CORRESPONDENCE.

SURPRISING VITALITY OF A HYACINTH BULB.

A year ago, I placed some Hyacinth bulbs in water-glasses to bring them on during the winter months, between our German double windows, which are very appropriate for the purpose. One of the bulbs remained behindhand in forming roots for about four weeks, and on examination it was found that about one-third of the bottom was decayed. The decayed portion was scraped out and painted with tincture of iodine. The bulb now, as if it had felt itself to be cured, put forth two roots, but no more, and in course of time flowered satisfactorily, if a trifle below standard. What makes the case so surprising is that this bulb could accomplish with only two roots, that for which luckier bulbs think thirty, forty or even more roots necessary. *Wilhelm Sturz, Berlin.*

VEGETABLE GARDEN.

CAULIFLOWERS.

Those who kept to the old and commendable practice of sowing a good batch of an approved variety of Cauliflower in October last, will have reason to be pleased, for this vegetable is, I consider, one of the easiest to keep through the winter, and it can be forced in batches to suit the demand. I prefer to sow the seeds at the beginning of October and again at the end of the same month, as there is always the danger of quick growth in mild weather at that time of year. The seedlings should be pricked off into seed-boxes or frames, and by about the middle or end of November the plants should be ready to pot into two-and-a-half inch pots, when they should be placed in a cold frame, taking care they have plenty of air. Later, the pots may be placed on the shelves in fruit houses that are "resting." Early in the New Year hot-beds should be prepared for them, and covered with about nine inches of soil, which should not contain too much manure, in which to plant them.

In my estimation there is no vegetable easier to force than the Cauliflower, and by having relays of plants in pots it is very easy to maintain a supply from the beginning of April until a crop can be had outside; these latter also should be secured from the same sowing and grown on in pots. I am quite positive this method is much easier and better than sowing in spring. Spring-sown plants, I have found, turn in immaturely and form small kurds which spread so soon as a few warm days occur.

As to varieties, most gardeners have their own ideas about them; I myself am very much in favour of Sutton's Early Snowball and Dwarf Erfurt. *James Page.*

SOCIETIES.

ROYAL HORTICULTURAL.

April 9 and 10.—The show held in connection with the meeting on these dates was arranged at short notice to take the place of the postponed London Daffodil Show. In the circumstances a small show might well have been anticipated, but the reverse proved to be the case, and the new Horticultural Hall was well filled with a good variety of floral subjects. While Orchids were not quite so numerous as on recent occasions, there were several good groups in which the valuable Cymbidiums again predominated, while Cattleyas, Brasso-Cattleyas, Dendrobiums and Odontoglossums of splendid quality were also included. The Orchid Committee recommended two First Class Certificates and four Awards of Merit to novelties. Flowering shrubs, including very good Roses and Clematises; alpines and Schizanthuses, were the chief general floral subjects. The Floral Committee recommended two Awards of Merit to novelties. There were several excellent groups of Daffodils and a large number of seedlings before the Committee, which recommended two Awards of Merit. There was no business of moment transacted by the Fruit and Vegetable Committee.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Mr. Gurney Wilson (Hon. Sec.), Col. Stephenson Clarke, Mr. Lionel de Rothschild, Mr. Fred J. Hanbury, Mr. H. G. Alexander, Mr. J. E. Shill, Mr. Charles H. Curtis, Mr. A. McBean, Mr. S. H. Low, Mr. J. Cowan, Mr. Fred K. Sander, Mr. E. R. Ashton, Mr. Richard G. Thwaites and Mr. Robert Paterson.

First Class Certificates.

Miltonia Lucia var. Molly Paterson.—This was exhibited a fortnight ago, when the flowers were as described on p. 252. On this occasion, however, the colour had developed extraordinarily, with the result that a F.C.C. was awarded. The sepals are light rose, with lighter mottlings and red-purple veins at the base. The petals are crimson with rose apices, and the wide lip is pale rose with rose-red flushing below the golden-brown mask. Shown by Robert Paterson Esq. (gr. Mr. A. Merry), Stonehurst, Ardingly, Sussex.

Brasso-Cattleya Springtide var. The Node (Cattleya Mossiae × B.-C. Maroniae).—A gorgeous flower of very large size. The sepals and petals are light, bright mauve-purple and the broad, rounded lip has a lovely fringe of similar colour surrounding a large old-gold, richly-veined central area, with purple shading at the base. Shown by Mrs. Carl Holmes (gr. Mr. T. Penton), The Node, Welwyn.

Awards of Merit.

Odontioda Cardinal Mercier (parentage unknown).—A graceful hybrid with flowers of good size and shape; sepals and petals deep rose, flushed with crimson; lip light, bright rose, with deeper rose and some deep red markings. Shown by Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Odontioda Bluebell (parentage unknown).—A beautiful Orchid, with finely-formed flowers set closely on a stout spike. The colour is bright rose-purple, violet-tinted, flushed with crimson-purple, and with a few paler markings. The disk is golden-yellow and the bases of the petals and upper sepal are white. Shown by Gus Mayer, Esq. (gr. Mr. R. Cottam), Wistler's Wood, Woldingham.

Ansellia congoensis, Witley var.—A very large plant was shown, and one tall stem carried a branching spike on which only a few flowers were expanded. These were dark, red-brown barred with yellow, and with a yellow tip to the brown-veined lip. Shown by J. J. Joicey, Esq., The Hill, Witley.

Sophro-Laelio-Cattleya Gertrude Geidels (S.-L.-C. Flamingo × S.-L.-C. His Majesty).—A very large hybrid for this section. The sepals and petals are purple and the lip is rich crimson-purple, with a pale yellow throat. Shown by Messrs. Charlesworth and Co.

Cultural Certificates.

To J. J. Joicey, Esq. (gr. Mr. J. Mackay), for Megaclinium Bufo, with an unusually fine spike of this quaint species.

To Mrs. Carl Holmes (gr. Mr. T. Penton), The Node, Welwyn, for Odontoglossum Maharajah.

Groups.

The Orchid growers were not in quite such strong force on this occasion, nevertheless, they made a good show along the north side of the hall.

Messrs. Sanders exhibited Cymbidiums in good style, displaying fine spikes of C. Pauwelsii, C. Bullfinch, C. Erica Sander in variety, C. Primrose Queen, C. Elfin, etc. Dendrobium Wardianum and D. nobile added colour to the group, while Galeandra Devoniana, Masdevallia Lowii, Lycaste macrobulbon, Coelogyne Lawrenceanum, Vanda suavis var. Albania, and Cattleya Suzanne Hye de Crom were other good things.

Messrs. Charlesworth and Co. had a smaller display than usual, consisting of fine spikes of Odontoglossum crispum in variety, O. Clydonia, O. Isabel Sander, O. Decius, O. Alvara, and other splendid subjects. In Mr. J. Evan's small group, the chief subjects were Cymbidium Ceres, Miltonia Bleuana, and Bifrenaria Harrisoniae.

Messrs. H. G. Alexander, Ltd., staged a very bright and attractive exhibit in which Laelio-Cattleya Blinor, Westonbirt variety, L.-C. Orange Beauty and L.-C. Orange Gem provided splendid colour. Cymbidium Ladybird, Brasso-Laelio-Cattleya Freda, B.-L.-C. Caligula var. excelsa, Brasso-Cattleya speciosa, B.-C. The Globe var. magnifica, and Cattleya Egret, Westonbirt var., were also included.

Laelio-Cattleya G. S. Ball figured boldly in the group from Messrs. Cowan and Co. Cymbidiums were also shown in excellent variety, in addition to Dendrobium Thwaitesiae, Veitch's var., Masdevallia Chimaera var. stupenda, Odontioda Vuylstekeae and the dark-hued O. Laura.

Messrs. Stuart Low and Co. had a bright group wherein Dendrobium thyrsiflorum, D. Farmeri, D. Thwaitesiae, D. Pierardii and D. Royal Princess were particularly good. With these were associated Cattleya Dusseldorffii, Brassavola tuberculata, Zygopetalum crinitum, Angraecum sesquipedale and several Odontiodas.

Dendrobium plumptonense var. Model was grandly shown by Baron Schröder (gr. Mr. J. E. Shill), Dell Park, Englefield Green.

Floral Committee.

Present: *Section A.*—Mr. Henry B. May (in the chair), Mr. Arthur Turner, Mr. B. R. Long, Mr. A. E. Vasey, Mr. C. F. Langdon, Mr. D. Allan, Mr. Hugh Dickson, Rev. Rollo Meyer, Mr. M. C. Allwood, Mr. D. Ingamells, Mr. William Howe, Mr. J. M. Bridgeford, Mr. D. B. Crane, Mr. J. B. Riding, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mrs. Ethel M. Wightman, Mr. R. Findlay and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Charles T. Musgrave (in the chair), Mr. E. A. Bowles, Mr. G. Reuthe, Mr. George Harrow, Mr. L. R. Russell, Mr. W. B. Cranfield, Mr. James Comber, Mr. Eric Marston-Jones, Mr. Amos Perry, Mr. Clarence Elliott, Mr. T. Hay, Lady Beatrix Stanley, Mr. E. H. Wilding, Mr. A. Bedford, Mr. T. W. Taylor, Mr. F. G. Preston, Mr. G. Yeld, Mr. R. C. Notcutt, Sir William Lawrence, Bart., Mr. Gerald W. E. Loder and Mr. N. K. Gould, Secretary.

Awards of Merit.

Marica gracilis.—This Brazilian plant is closely related to the Iris, but the flowers are much more short-lived. It was introduced in 1830, and is figured in *Bot. Mag.*, tab. 3,713. A sturdy, well-grown little plant was shown. The outer segments of the flowers, set at right angles, are broadly ovate and white, except at the base, where the colouring is a golden-brown. The inner segments are curiously curved inwards, and are coloured bright blue, with prominent white lines. Shown by Sir William Lawrence, Bart., Burford, Dorking.

Viburnum Burkwoodii.—The parentage is given as Viburnum utile and V. Carlesii. In general habit this hybrid is much more like the former than the latter species. It is an erect-growing, robust, sub-evergreen. The leaves are opposite, ovate-lanceolate, stout, lightly serrated, shining green above and grey below. The panicles of white flowers which terminate the laterals are much like those of a good variety of Viburnum Tinus, and have a pleasing fragrance. The buds are pinkish. Shown by Messrs. Burkwood and Shipwith.

Groups.

At the far end of the hall, Messrs. Blackmore and Langdon set up an admirable group of Schizanthus Wisetonensis hybrids. The plants were shapely and bore large flowers of very pleasing colours. Messrs. Stuart Low and Co. had a group of tall bushes of Mimosas (Acacias) and Camellias, with good Hippeastrums, Anthuriums and Gerberas.

Roses were particularly well shown by several growers. Mr. Elisha J. Hicks included good vases of Clovelly, Ophelia, Mrs. G. Norwood, Madame Butterfly and Mrs. Elisha J. Hicks in his collection. The outstanding varieties shown by Mr. George Prince were Austrian Yellow, Austrian Copper, Orange Reflection and La Reine Elizabeth, in delightful sprays, and vases of Mabel Morse, Richmond and Lady Hillingdon. Messrs. F. Cant and Co. included vases of two new H.T. varieties, Dorothy Hodgson, pink, and Mrs. Hilton Brooks, salmon-blush.

Groups of specimen Polyantha Roses in pots were arranged by Messrs. W. Cutbush and Son, and Mr. J. H. Pemberton. The former displayed much better finish in the arrangement. The chief varieties were Locarno, Sunshine, Golden Salmon, Kersbergen and Ellen Poulsen. Mr. G. H. Dalrymple again set up a large collection of his admirable coloured Freesias. In addition to several vases of interesting seedlings, he showed Treasure, Mrs. R. F. Felton, Mendota, Old Rose and Yellow Hammer. Mr. Baldwin Pinney staged sweet Violets and Primulas.

The several collections of Carnations included many admirable blooms. Messrs. C. Engelmann, Ltd., had splendid vases of Laddie, Red Laddie, Master M. Stoop and Mrs. A. J. Cobb. In their exhibit, Messrs. Stuart Low and Co. showed White Pearl, Melchet Beauty, Thomas Ives and Topsy. Messrs. Allwood Bros. had an imposing group of the most popular varieties and many bowls of the pretty little Dianthus Allwoodii varieties.

Most of the exhibitors of alpines displayed their plants in small rock gardens of sandstone or weathered Cumberland stone. Messrs. Tucker planted good patches of Saxifraga arco-valleyi, S. dalmatica, S. Sundermanni, various Drabas, Primulas and other alpines. Messrs. M. Prichard and Sons had bright patches of Anemone fulgens var. polypetala, with Saxifrages, Primula dentata var. superba, P. altaica var. grandiflora and double-flowered Primroses. Mr. George E. P. Wood planted Violas, Primulas and Arabis, and Messrs. Hollambys had Primulas and Gentians.

In a boldly arranged rock garden, Mr. Gavin Jones displayed Draba Dedeana, Saxifraga Petraschii, S. Godseffiana, Primula pubescens var. alba and other seasonable alpines. Mr. Stephen Sims set out small Conifers, Ericas and Muscari; Ericas, Saxifrages, Primulas and dwarf Irises were the chief subjects shown by Messrs. Maxwell and Beale. A number of good alpines in pots and pans, shown by Mr. Clarence Elliott included Shortia uniflora var. grandiflora, Saxifraga Griesbachii, Wisley variety, S. Myra, S. scardica and some particularly good specimens of the compact form of the upright Irish Juniper. Bevan Rogers, Esq., Henley-on-Thames, had a praiseworthy collection of alpines in pots, among which were various Saxifrages, Primulas, Androsaces and Eritrichium. Mrs. Milford, Chedworth, Gloucestershire, showed alpines set in moss.

C. Scrase Dickens, Esq., Coolhurst, Horsham, staged an interesting collection of the spring-flowering Hellebores. Messrs. D. Stewart and Son had a bright exhibit which included pink-flowered double Cherries, Dielytra (Dicentra) spectabilis, Daphne Cneorum and many other spring subjects. Messrs. W. Wood and Son staged Magnolia stellata and other shrubs with Violas and alpines. Good Rhododendrons, Brooms, Azaleas, Primulas and Primroses were displayed by Messrs. Bakers. Next to their Schizanthuses, Messrs. Blackmore and Langdon set out very good blue Primroses and, near by, Mr. John Hall had sturdy pot plants of Primula denticulata var. Hallii. Dwarf shrubs were shown by Messrs. Patricks. Messrs. Pulham and Son exhibited a sandstone rockery, and the Misses Hopkins had a small rock garden exhibit.

Massed bushes of Forsythia spectabilis in the exhibit of Messrs. Barr and Sons were very effective. They also showed good varieties of Cydonia (Pyrus) japonica, Primula rosea, the old-fashioned Primrose Jack-in-the-Green, double-flowered Primroses, Viola Huntercombe Purple, Arabis Taplow Rose and Narcissus Bulbocodium. Messrs. L. R. Russell, Ltd., had an attractive grouping of Wistarias, Clematises, Azaleas and Boronia megastigma.

The association of various flowering Cherries and Forsythia spectabilis formed a very pleasing background to the exhibit of Messrs. Waterer, Sons and Crisp, who also displayed Aubrietias, Primulas, Daphne Blagayana, Tulipa praestans, van Tubergen's variety, and a good selection of Erythroniums. Messrs. W. H. Rogers and Son staged Azalea Apple Blossom, Skimmias, Morisia, Iris azurea and Anemone fulgens.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. G. W. Leak, Mr. G. Monro, Mr. W. B. Cranfield, Mr. A. White, Mr. W. Poupart, Mr. C. W. Needham, Mr. F. A. Secrett, Rev. Rollo Meyer, Mr. C. H. Curtis, Mr. Reginald Cory, Mr. H. Smith, Mr. F. Barchard, Mr. J. L. Richardson, Sir Daniel Hall, Miss E. Willmott, Mr. G. Churcher, Mr. W. Copeland, Mr. J. D. Pearson and Mr. A. Simmonds, Secretary.

Awards of Merit.

Narcissus Fanny Currey.—An exquisite variety of the Leedsii section, of very delicate colouring. The broad perianth segments, slightly ridged and waved, are of a delicate creamy-whiteness, while the frilled cup is rich cream, flushed with apricot on the margin. Shown by Mr. J. L. Richardson, Prospect House, Waterford.

Narcissus Golden Ingot.—A large-flowered Incomparabilis Narcissus, suggestive of a Trumpet Daffodil. The bloom is of fine substance, with broad, oval and flattened perianth segments of rich, bright primrose-yellow; the large cup, nearly one-and-a-half-inch long, trumpet-shaped and frilled at the mouth, is rich golden-yellow. The handsome blooms are held erect on stout stems, while the foliage is very substantial. Also shown by Mr. J. L. Richardson.

Quite a number of seedling Narcissi were exhibited before this Committee, the only variety other than the above two to receive recognition being Advance Guard, shown by Messrs. R. H. Bath, Ltd. as being suitable for market and garden purposes, and this was recommended for trial at Wisley. It is a Trumpet Daffodil, with a large, deep golden trumpet which is crinkled and reflexed at the margin, while the waved perianth segments are of paler colouring.

Groups.

As forerunners to the Daffodil Show next week, there were several magnificent banks of Narcissi displayed at this meeting; that set up by Mr. J. L. Richardson being of exceptional merit, portraying a high standard of skill both in cultivation—every bloom was of first-class quality—and arrangement. Trumpet Daffodils, in many forms and shades, were the dominant feature, but were not so much in evidence as to detract from the brighter beauty of the numerous Incomparabilis, Poeticus, Poetaz and other sorts, all in great variety. Among golden-trumpeted varieties we noted Golden Flag, Master Robert, Luxor, Nimrod, Carlton, Music Hall and Solaria; Marquis of Headfort, Beersheba (magnificent), Moira O'Neill, Tenedos, White Nile, Helen O'Hara, Suda and White Emperor were outstanding pale-coloured sorts, and there were several magnificent seedlings. The finest of the Incomparabilis varieties included Orange Glow, Koko, Damson, Mitylene, Fortune, Silver Plane, Brightling, White Sentinel and Therapia. Scarlet Gem was an attractive Poetaz, while there were also many beautiful Poeticus varieties. A really grand exhibit, possibly the finest in the hall.

Messrs. Barr and Sons staged an attractive group, comprising many varieties of each section. In the centre was an imposing pillar of Sunrise, while among the other varieties which commanded attention, mention may be made of Nero, Polemon, Glory of Haarlem, and Gold Sand, all Trumpet sorts; Lucille, Hera, Fiery Monarch, John Evelyn, and several double varieties, such as Glowing Phoenix, Carnation, Milk and Honey, Romagna and Lune de Noel. A small collection of Narcissi was displayed by Messrs. D. Stewart and Son, in which we noted good examples of the double-flowered Irene Copeland, also Spring Glory, King Alfred and several miniature sorts.

At the far end of the hall, Mr. F. A. Secrett had a grand collection, admirably arranged, and consisting chiefly of Poeticus varieties. There were large pillars of Wide Wing and Winnie Weedon, other splendid sorts in this section being Heron, Dinton Red, and the distinct and dainty Red Rim. A special feature was made of Everlasting, an Incomparabilis of good market quality, while there were also several striking Trumpet varieties, including Alfred Hartley, rich gold, and the beautiful, cream-coloured Kingsley Fairbridge.

Mr. Herbert G. Longford had an arrangement of Narcissi, consisting of pillars of such varieties as Croesus, Emperor, White Lady, Horace, King Alfred and Bernardino, and these acted as a background to Polyanthuses and Primroses in many shades.

Another really magnificent group of Narcissi was staged by Mr. R. F. Calvert, who made special features, in the form of large pillars, of Firetail, Liscarton and Chit Chat, together with Croesus, of grand quality, White Emperor and Medusa. There were numerous other first-class sorts in this charmingly arranged exhibit, not the least attractive being Yukon, Tenedos, Water Lily, Bradwardine, Fortune's Gem, White Sentinel, Amir, Clwyd, Fortune's Glory and Coverack Lad.

A small collection of Tulips was staged by Messrs. G. W. Miller; it contained numerous double sorts, also good blooms of Yorkshire Cheer, Prince of Austria and General de Wett.

Fruit and Vegetable Committee.

Present: Mr. E. A. Bunyard (in the chair), Mr. W. H. Divers, Mr. A. W. Metcalfe, Mr. W. Poupart, Mr. W. F. Giles, Mr. J. Wilson, Mr. A. Bullock, Mr. H. Markham, Mr. C. G. A. Nix, Mr. G. F. Tinley and Mr. A. N. Rawes, Secretary.

This Committee had no business of importance to conduct and there were no exhibits of fruits or vegetables in the hall.

MORAY AND NAIRN FORESTERS'.

The Annual General Meeting of this Society was held in Forres, Mr. E. S. Grant in the chair. In his opening address, the Chairman specially thanked those proprietors who had kindly granted facilities to the members for visiting their estates, and also the lecturers for the very instructive papers read before the members during the past winter. The reports of the Secretary, Treasurer and Librarian were submitted and considered satisfactory. The following were elected office-bearers for 1929-30:—President, Mr. F. Machray, Dunphail; Vice-Presidents, Mr. C. Bain, Mr. J. D. Robbie and Mr. A. Warren; Secretary, Mr. C. Asher; Treasurer, Mr. A. Ross; Librarian, Mr. J. Robbie; Auditors, Messrs. J. Clark and M. Feaks; Joint Journal Editors, Messrs. J. Clark and E. S. Grant. Six new names were added to the Committee. Provisional arrangements were made for visiting the following estates during the ensuing summer: Monaughty, Lethen, Sanquhar, Gordon Castle, Logie and Relugas.

PAISLEY FLORISTS'.

The annual Spring Show of this Society, which was instituted many years ago was held on March 29 and 30. Hitherto it was a one-day event, and as the exhibits were crowded into the limited space of one hall, an extension was made this year by staging the Tulips and flowering pot plants in an adjoining hall of smaller dimensions. The schedule contained fifty classes, but competition was not particularly keen owing to the influence of the hot weather on Tulips and Daffodils, some of which were too fully developed to justify special recognition. Hyacinths were a strong section, both as regards numbers and quality, and as an instance of the high standard of culture, it may be mentioned that in the class for three Hyacinths in a pot, Alex. Robertson, Esq. (gr. Mr. Duncan Graham), Bulgone, was first with three flower spikes of Jacques, each measuring eleven inches in length. The Special Prize for the best pot of Hyacinths in the show was awarded to Mr. E. G. Ross, who succeeded in producing twenty-three well-grown spikes of Grand Maitre.

Mr. Graham was the most successful competitor, with a record of twenty first prizes and the special prize for the best plant in the show (Primula obconica). Other prize-winners were Messrs. Hector Fraser, J. Bowie, J. Houston, E. G. Ross, T. Harvey, D. W. Keir and James Thomson. Special prizes were awarded to Mr. Hector Fraser, for the best Narcissus, variety Whitewell; Mr. John Bowie, for the best Tulip, variety Prince of Austria; and Mr. E. G. Ross, for the best Hyacinth, variety Grand Maitre.

The Parks Department of the Corporation was represented by an extensive group on the platform, in which Rhododendron Pink Pearl was used as a background to Hyacinths, Daffodils, Tulips, Deutzia gracilis and Cinerarias.

An interesting collection of Narcissi embracing thirty varieties was staged by Sir John Reid (gr. Mr. John Davidson), Ardencraig, Rothesay. Included in the exhibit was an improved form of Sir Watkin. The flowers were more solid, the perianth was of better formation, and the colour of the latter was a little lighter than that of the type. Other outstanding varieties in this group were Sir Francis Drake, Gloria Mundi, Homespun, Whitewell, Spring Glory, White Queen and Lord Kitchener.

GENERAL BULB GROWERS OF HAARLEM.

The different floral committees of this Society have awarded "Forcing Certificates" to the following Daffodils and Tulips:—

Early Forcing Certificates.

Narcissus Early Perfection (*Poetaz*).—Well-closed perianth, nearly white; cup clear yellow and frilled. Shown by Messrs. R. A. van der Schoot, at Hillegom, January 21.

N. February Gold (*cyclamineus hybrid*).—Perianth sulphur-yellow and recurved; small, orange-yellow trumpet; small flowers. Shown by Messrs. de Graaff Bros., and S. A. van Konijnenburg and Co., at Noordwijk, December, 24, 1928.

Tulip Attraction (*Single, early*).—Deep orange with scarlet shading. Shown by Messrs. N. and J. Roozen Bros., at Heemstede, December 24, 1928.

T. Captain of the Violets (*Single, early*).—Vivid violet, large, oblong-shaped flower. Shown by Mr. Th. van der Vlugt, at Lisse, December 24, 1928.

T. J. A. Geysendorffer (*Single, early*).—Orange-brown. Shown by Mr. L. Schoorl, at Lisse, December 24, 1928.

Forcing Certificates.

Narcissus Lord Wellington (*Yellow Trumpet*).—Very big, golden-yellow flower, large, with flat perianth and long, wide-opened trumpet. Shown by Messrs. A. Frylink and Sons, at Sassenheim, February 4.

Tulip Fascination (*Single, early*).—Soft pink-rose. Shown by Messrs. W. J. Eldering and Son, at Overveen, December 31, 1928.

ANSWERS TO CORRESPONDENTS.

Begonia and Chickweed Foliage Unhealthy.—*C. E. C.* There was no fungus present on the Begonia and Chickweed foliage. The trouble appears to be due to some cultural error. Rapid changes in temperature or unsuitable soil conditions are liable to give rise to this trouble.

Celery Disease.—*J. C.* It is possible to obtain dry Bordeaux mixture, to which water is added when required for use. Either "Cupryl" (Messrs. W. J. Craven and Co., 48-50, Port Street, Evesham), or "Vermorite" (Messrs. Cooper, Pegler and Co., Christopher Street, Finsbury Square, London), may be used for spraying Celery plants in the seedling stage. The wash should be applied in a mist-like form so that the fungicide is evenly distributed over the foliage. Spraying must be continued at intervals after the plants are placed in their permanent quarters.

Colletia teniculata.—*G. P.* There is no evidence that this species has ever been introduced to cultivation. Of thirty-nine species that have been described only four are to be found in gardening dictionaries. They are not particularly hardy in Britain, and have to be planted in sunny, sheltered situations, and that militates against their introduction. They are difficult to describe and some of them are not constant to form. C. teniculata means "rather slender," and you will note that the spines are more slender, more straight and shorter than those of C. spinosa. The flowers of the latter are described as yellowish-white or greenish-white by different authors. The flowers of other species are described as cream, pale yellow and yellow. No doubt the flowers of C. teniculata are some of those shades, but in the dried, herbarium state they are brown, like all the rest. Any private collector might have brought home fruits, without recording the fact, or might have considered it to be C. spinosa.

Control of Club Root with Mercuric Chloride.—*J. C.* Mercuric chloride (corrosive sublimate) has been found to give good control of club root of Brassicas. The method employed is to sterilise the seed bed by watering it with a solution of one ounce of mercuric chloride in six gallons of water (the quantities may be reduced proportionately if less is required), and ten days after germination the seedlings should be watered with a solution of one ounce in ten gallons of water, the watering being repeated seven days later, and again a few days previous to planting time. Before being planted, the seedlings should be dipped for one minute in mercuric chloride solution of one ounce in ten gallons of water (proportionately less if so desired). Among precautions to be observed are:—(1) use only finely-powdered material; (2) do not confuse mercuric chloride or corrosive sublimate with insoluble calomel or "mild mercuric chloride," as it is sometimes called; it is best to ask for corrosive sublimate when purchasing of a chemist; (3) apply enough solution to moisten the soil about the base of the seedlings thoroughly; (4) do not water the seedlings at the germinating stage, but allow ten days to elapse; (5) a weaker solution (one ounce to fifteen gallons of water) should be used on sandy soil, or in the case of uneven germination; and (6) as corrosive sublimate is a deadly poison it should be handled with extreme care. The experiments in controlling club root with mercuric chloride have been carried out over a number of years at the Staffordshire Farm Institute, where it has also been found to give effective control of root maggot, black leg and black rot of Brassicas. The material is not expensive and can be obtained from most retail chemists at a cost of about 1s. 4d. per ounce.

Difficulties with Hot-water Pipes.—*R. E. G. B.* (1) It would seem to us that something is wrong with the escape of smoke and heated air from the boiler to the chimney. A horizontal tubular boiler should be fitted up horizontally. The furnace door in most, if not all, boilers should determine the fixing of the boiler before it is built in with bricks. Erratic methods for the uniform passage of smoke from the furnace to the chimney are to be met with in some establishments, and they are usually very unsatisfactory in heating and also to the stoker, when there are dips and bends in the passage for smoke. If this is straight and always on the rise, the rest is easy, and a proper use of the damper, and the furnace and ash-pit doors, will regulate the fire to a nicety. We think the re-erection of the boiler desirable. (2) One of your statements we do not understand, namely, "the pipes in the second and third (house) are laid much more even than the first three." If you mean "than the last three," that might explain matters. The flow pipe should rise steadily from the boiler to the far end of the sixth house, where an air tap should be situated. Hot water always rises, and it should pass along the flow pipe to the farthest end, if the piping is continuous. It is just possible that the supports of the pipes in the last three houses, farthest from the boiler, were right at first, but may have become sunken in the soil of the floor, and no longer keep the pipes rising. It would be advisable to see to this, and have them raised, if necessary. We do not see the necessity for a stop valve on the return pipe, close to the boiler, because that would stop the circulation.

Insects in Cucumber House.—*H. M. B.* The small insects found in the Cucumber range are a species of Pseudococcus, one of the grass-feeding, soil coccids or root mealy-bugs. There is little chance of the insects attacking the roots of Cucumbers, but they may be eradicated from the borders by injecting carbon disulphide into the soil. Holes, about six inches deep, are made, and the liquid poured into them at the rate of one ounce to each square yard. After pouring in the liquid, cover the hole with a stone or piece of turf to conserve the fumes. The material is highly inflammable, and no naked light should be brought near it.

Names of Plants.—*P. D. F.* Ipomaea tuberosa, a native of central America.—*M. P.* 1, Erica carnea var.; 2, Saxifraga, probably apiculata; 3, not recognised. The material sent was insufficient for accurate identification.

Soil in poor Condition.—*R. R.*—There appears to be a large excess of burnt material in the soil, and no doubt if it was mixed with about one-third leaf-mould, with the addition of sand, it would be suitable.

Tomatos and Foot-rot Disease.—*S. E.* The Tomato plants are infected with the foot-rot fungus, Phytophthora cryptogea. Infected soil should be sterilised by steaming or with a two per cent. solution of formaldehyde. The seedlings should be watered with Cheshunt Compound, which will destroy the disease organisms in the soil, but will not benefit plants already infected, as the fungus is within the tissues of the plant where the liquid cannot reach it. Remove and burn infected plants, and water the remainder with Cheshunt Compound.

Tulips Diseased.—*J. W.* The Tulip bulbs are severely affected by the fungus Botrytis tulipae and by millipedes, Polydesmus complanatus. All infected bulbs should be removed and burnt, while the soil surrounding them should be taken away and buried deeply. Care should be taken to see that all bulbs are removed, otherwise sclerotia will form on the brown scales surrounding the nose of the bulbs, and on the remains of the foliage, and cause the ground to become infected. So soon as the bulbs are removed, the ground should be dressed with crude naphthalene at the rate of two to three ounces to the square yard in order to destroy the millipedes. More efficacious results will follow when the naphthalene is watered in, or applied prior to rain.

Communications Received.—H. M.—A. W. D.—A. G. H. F.—J. C.—W. E.—H. M.—E. O.—W. J. B.—W. G.—C. E.—G. F. W.—F. J.—A. O.—E. M. B.

THE

Gardeners' Chronicle

No. 2208.—*SATURDAY, APRIL* 20, 1929.

CONTENTS.

Alpine garden—
  Alpine Campanulas 292
  Arenaria balearica... 292
  Primula suffrutescens 292
Book, notice of—
  Nature in Field and Meadow 296
Bulb garden—
  Galanthus nivalis var. viridapice ... 297
  Tulipa Greigii ... 297
Chile and the Andes ... 294
Daffodils, raising of in New Zealand ... 296
Flower garden—
  Nicotianas 298
Fruit blossoms, order of flowering and pollenation of 298
Indoor plants—
  Asters as pot plants 292
Lanarth, Cornish flower-growers' visit to ... 287
Larch, correct name of 287
Lavender, investigations on the shab disease of 290
Market fruit garden ... 300
Morgan, Mr. L. E. ... 288
Obituary—
  May, Joseph ... 302
  Randall, Samuel George 302
  Ries, Friedrich ... 302
  Vert, James ... 302
Oil fuel for boilers ... 290
Olive-growing in Spain 288
Orchid notes and gleanings—
  Haemaria discolor... 292
  Renantheras ... 292
Plants new or noteworthy—
  Watsonia Beatricis 292
Polyanthus, the garden 294
Rosa gigantea in flower 288
Primula kewensis ... 287
Societies—
  London Daffodil Show 300
  Reading Gardeners' 302
  The Orchid Club ... 301
  United Horticultural Benefit and Provident 302
Sodium chlorate as a weed-killer 298
Week's work, the ... 290
Woodland garden—
  Uvularias 297

ILLUSTRATIONS.

Chile and the Andes 295
Morgan, Mr. L. E. 288
Odontioda Bluebell 289
Tulipa Greigii 297
Viburnum Burkwoodii 291
Watsonia Beatricis 293

SUPPLEMENT PLATE.

Daffodils in a Woodland.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48·6°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, April 17. 10 a.m. Bar. 30·4 Temp. 54°. Weather, Fine.

Primula kewensis. GRADUALLY, and as though reluctantly, plant hybrids begin to reveal to the patient geneticist some of the secrets of their birth and behaviour. Such, at all events, appears to be the case with Primula kewensis, that hybrid of well-known and peculiar history which chance brought forth twenty-nine years ago at Kew among a batch of Primula floribunda seedlings. The solitary come-by-chance was suspected to be a hybrid between the Afghan species P. floribunda and the Arabian and Abyssinian P. verticillata. Pollenations of P. floribunda by P. verticillata made by Mr. J. Coutts at Kew proved the truth of the suspicion, but, strange to relate, subsequent attempts to reproduce the hybrid by the same cross proved unsuccessful. Cytological examination of the dividing nuclei of P. kewensis shows that this hybrid is what is known as "diploid," that is, it has twice the number of chromosomes (eighteen) contained in the corresponding cells of either of its parents. In this state, namely, with the double number of chromosomes, P. kewensis is infertile. Self-pollenation yields no seeds, nor does pollen of either parent species when used on the stigma of P. kewensis produce viable seeds. Pollen of the hybrid, on the other hand, used to fertilise P. floribunda, does induce seed formation, albeit that the plants so produced are mainly of P. floribunda type with some signs of hybrid influence. This might be explained by supposing that of the pollen grains produced by the hybrid some have more or less the nine P. floribunda chromosomes, and such pollen grains of the hybrid effect fertilisation, whereas other of the pollen grains of the hybrid containing chromosomes of P. verticillata origin are ineffectual and fail to fertilise the egg cells of P. floribunda. If one of the nine chromosomes of a pollen grain were of the P. verticillata type, and the other eight were of P. floribunda type, then the offspring would be P. floribunda with one or two characters of P. verticillata. Although, as has been stated, the diploid hybrid—that is, the original Kew plant with eighteen chromosomes—is infertile, it has happened on three occasions that seeds have appeared in hybrid (kewensis) plants, first in 1905, in the nursery of Messrs. James Veitch and Sons, and later, in 1926, at the John Innes Institution, when it was shown that the plant which so dramatically reversed the traditional habit of the hybrid was, unlike its infertile fellow-hybrids, not a diploid plant with eighteen chromosomes, but a tetraploid, that is, a plant with four times the number (thirty-six) of the chromosomes possessed by either parent. With this sudden doubling of the chromosomes P. kewensis became fertile. For the detailed explanation of why this should be so, the reader may be referred to the account of the investigations by W. C. F. Newton and Caroline Pellew,* on which this summary is based; it must suffice here to state that if the ordinary cells of the vegetative body contain each thirty-six chromosomes, the reproductive cells will contain eighteen. Of this number, nine may be supposed to be of P. floribunda origin and nine deriving from the other parent, P. verticillata. Hence, when male cell unites with the female, fertile issue is produced, because each of the chromosomes of the male finds a compatible chromosome in the female cell, and fuses with it, and so with each chromosome successfully paired the fecund union of male and female cell is assured.

Our Supplement Plate.—As Daffodils occupy the foremost position in our gardens at the present time, we have pleasure in presenting as a Supplement Plate to our present issue, an illustration depicting the fine effect obtained with Daffodils in Mr. Price's woodland garden at Knollwood Farm, Port Chester, New York, U.S.A. The scene presented is typical of many such in large English gardens at the present season, and emphasises the value of the Daffodil for naturalising purposes. Other views showing the effects obtained with Daffodils at Knollwood appeared in our issues of April 21 and June 2, 1928.

Appointment of Members of National Mark Fruit Trade Committee.—In view of the extension of the National Mark Scheme to Tomatos and Cucumbers, the Minister of Agriculture and Fisheries has approved the appointment of Mr. A. G. Linfield, Mr. John Poupart and Mr. E. G. Shoults, to be additional members to the National Mark Fruit Trade Committee, which is responsible for the consideration of applications to use such grade designation marks as may be prescribed by regulations made under the Agricultural Produce (Grading and Marking) Act, 1928, in connection with home-grown fruits.

The Foundling Hospital Site as a Park.—The rescue of the site of the former Foundling Hospital, in central London, from development at the hands of builders appears to be assured, at any rate for the immediate future, by a contract which is being prepared between the owners and Viscount Rothermere, the brother of the late Lord Northcliffe. This provides for the sale of the site to Lord Rothermere at the price of £525,000. A deposit of £50,000 is being paid by Lord Rothermere, together with interest on the remainder at five-and-a-half per cent. per annum until June 30, 1931. If by that time the purchase is not completed the site will revert to the vendors. Lord Rothermere will make a further contribution of £50,000 towards the purchase money, making £100,000, in addition to his liability for interest on the balance outstanding. The only condition he makes is that the entire site shall be used as a children's park, subject to a reservation that for one month in the year it shall be placed at the disposition of the British Boy Scouts Association for a camping ground.

Peter Barr Memorial Cup.—The handsome Peter Barr Memorial Cup, which perpetuates the memory of Peter Barr as a great pioneer in the popularisation of Daffodils, is awarded annually by the vote of members of the Royal Horticultural Society's Narcissus and Tulip Committee. The voting takes place on the occasion of the London Daffodil Show, and on Tuesday last, it was unanimously in favour of Mr. G. W. Leak, of Messrs. R. H. Bath, Ltd., Wisbech, a Vice-Chairman of the Committee, a member of the R.H.S. Council, and a raiser and extensive cultivator of Daffodils.

Rhododendron Association.—The second Annual General Meeting of the Rhododendron Association will be held in the Lecture Room of the Royal Horticultural Society's New Hall, Westminster, S.W.1, on Tuesday, April 30, 1929, at 4.30 p.m., when the Annual Report and Accounts for 1928 will be presented, and officers elected for the ensuing year. We notice, in connection with the Rhododendron Show on April 30, that, of the four new classes inaugurated, one is for six varieties of Rhododendron foliage, and another for "the best foliage Rhododendron plant."

Correct Name of the Larch.—In the *Quarterly Journal of Forestry* (April, 1929), Mr. T. A. Sprague, of the Herbarium, Royal Gardens, Kew, points out that the correct name of the Larch under International Rules is Larix decidua, Mill. In order to ascertain the correct name of a species, all its names should be placed in strict chronological order starting from 1753. In the case of the Larch, we have the following synonymy: Pinus Larix L. (1753), Larix decidua, Mill. (1768), Pinus laeta, Salisb. (1796), Abies Larix, Poir. (1804), Larix europaea, DC. (1805), Larix pyramidalis, Salisb. (1807), Larix communis, Link (1827), Larix vulgaris, Fisch. ex Spach (1842), Larix Larix, Karst. (1880-83). The Rules (Art. 48) provide that when a species is placed in another genus, it should take the earliest legitimate specific epithet, unless the resulting combination is barred by the rules themselves. The earliest specific epithet is Larix, 1753, but the resulting combination Larix Larix, Karst., is barred by Art. 55, 2°, because the specific epithet is identical with the generic name. The next name in chronological order is Larix decidua, Mill., and that is the correct name of the species. To anyone familiar with the International Rules, there can be (on the basis of the known facts) no doubt about the matter, and the name Larix decidua is accordingly accepted by all taxonomists who adhere strictly to the Rules.

Cornish Flower Growers' Visit to Lanarth.—Growers from the Penzance and Tamar Valley districts were entertained on Tuesday, April 2, by Mr. P. D. Williams, at Lanarth. The weather conditions were ideal, and the lawns and grounds looked beautiful under a blazing sun. Glimpses of brilliant colour could be caught in all directions, the fiery-red of Rhododendrons showing up in striking contrast against a background of tall Bamboos and white Magnolias. Drifts of the gold of the Narcissi, and the blue of Scillas formed living carpets of colour. Some forty growers attended to see the results of the work of Mr. P. D. Williams in the breeding of new varieties of Narcissi, and they were conducted to the beds of new seedlings by Mr. Williams, who personally acted as guide throughout the afternoon. The air of expectancy quickly changed to wonder, amazement, and in many cases even to envy. All present admired the wonderful display of some thousands of lovely new varieties. Some of the seedlings most admired included Niphetos, a pure white Leedsii, the shape and proportions of which are considered to be perfect. Seedling No 35 is a beautiful rich yellow of the Jonquil type. Great interest also centred around the grand varieties Fortune, Damson, Tunis and Nimrod, and the seedlings numbered 228, 886, 555, 713 and 938, the last being a beautiful Incomparabilis with a perfect yellow perianth and deep orange trumpet of very fine texture. Later, the growers were entertained to tea by Mrs. P. D. Williams, after which the Rev. A. T. Boscawen, of Ludgvan, proposed a vote of thanks to Mr. and Mrs. Williams, which was seconded by Mr. Rogers, of St. Dominic, and heartily endorsed by all present. Mr. Rogers said that only by such a visit to Lanarth and a personal inspection of the new varieties, could one fully appreciate the work of Mr. Williams, which called for untiring energy and great interest. Mr. Williams, in reply, stressed the importance of keeping bulb plantations free from rogues. He thought there were tremendous possibilities in the bulb industry, especially in the dry bulb trade. Growers in other parts of the country, and the forcers of Spalding and Wisbech, wanted Cornish bulbs as they were earlier than any others, but they wanted clean bulbs true to name, and these could not be produced without closer attention to rogueing. He also emphasised the importance of grading bulbs, separating the "mothers" from the "rounds" and the "rounds" from the "chips," and the growing on of "chips" to produce "rounds" for forcing. He congratulated the growers on their improved standard of marketing, and hoped that they would continue to enjoy the good markets ruling at present, for Cornish produce. A small party, including those from the Tamar valley, afterwards visited the gardens of Mrs. Whale, at Coverack, where more Narcissus seedlings were found growing luxuriantly. Other market flowers were being picked, these including Polyanthuses and Myosotis.

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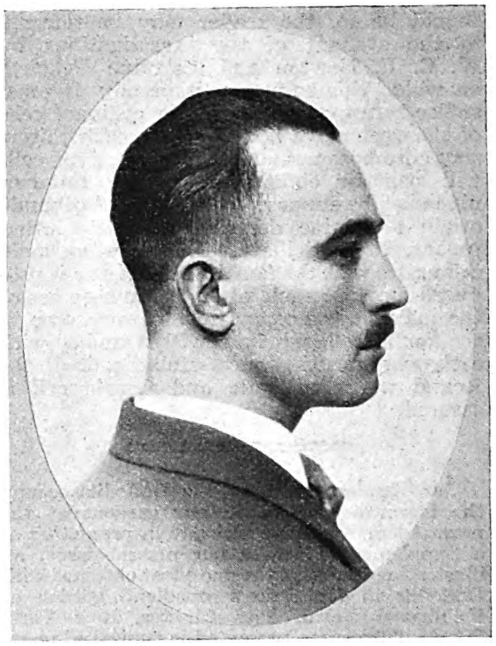
* "Primula kewensis and its Derivatives," by the late W. C. F. Newton, and Caroline Pellew, of the John Innes Horticultural Institution. *Journal of Genetics*, Vol. XX, No. 3, January 1929.

Rosa gigantea in flower at Cambridge Botanic Garden.— Rosa gigantea, so rarely seen in bloom, is now flowering in the Cambridge Botanic Garden. The specimen is in the extreme west end of the corridor and in a positon where it has the advantage of full sunshine. It has only one expanded flower, pale lemon-white in colour, and four-and-a-half inches in diameter, but there is every promise of more blooms, as indicated by nine golden-yellow buds. Mention is made in *The Gardeners' Chronicle* of 1910, Vol. XLVII, p. 370, of Rosa gigantea having borne two blooms at Kew, for the first time. Previous to this, the species was figured in these pages in 1889; flowers were shown on February 25, 1910, from the Duke of Northumberland's garden at Albany Park, Surrey; it flowered in the same gardens in 1903, when two blooms were produced, and again the following year, when the plant carried upwards of a dozen flowers. There are no records of this Rose having bloomed before in this country, excepting in the nurseries of Mr. Cant (see *Bot. Mag.*, t. 7,972). Sir George Watt first discovered the species in Manipur in 1882. Later it was found in the Shan Hills, Upper Burmah, and later still by Dr. Henry in south-western China.

Cider Inspection at Long Ashton.—On Thursday, May 2, at the Research Station, Long Ashton, Bristol, the ciders made during the season 1928-29 will be displayed, and the fruit plantations of the Station will be open to visitors from 11 a.m. to 4 p.m. The Ministry of Agriculture and Fisheries has arranged for a series of demonstrations of the most modern types of small tractors and other implements suitable for fruit-growers and market gardeners. These will be given at intervals during the day. It is anticipated that this feature of the programme will be of particular interest and practical value, and it is hoped that fruit-growers will make a special effort to attend.

Glasgow Flower Show.—The Glasgow and West of Scotland Horticultural Society, in conjunction with the Glasgow Corporation, will hold a great flower show in the Kelvin Hall, Glasgow, on September 3, 4 and 5. The schedule and the "Traders' Prospectus" have both been distributed. The former is enlarged, and now includes twenty-three classes for bee-keepers, while the prize-money is stated to be over £1,200, and there are numerous Challenge Cups, Trophies and Medals. The Glasgow Show is the largest and most important held in Scotland, and attracts visitors from all over Scotland and the north of England. The Kelvin Hall has been specially built by the City Corporation for the purpose of such displays, and is one of the most spacious and interesting buildings of its kind in the country. The Show Secretary is Mr. J. Carrick Weir, 115, St. Vincent Street, Glasgow, C.2.

Mr. L. E. Morgan, N.D. Hort.—The Parks Committee of the County Borough of Stockport, controlling some twenty parks and recreation grounds in the borough, recently appointed Mr. L. E. Morgan, N.D.Hort., as its Parks Superintendent. Mr. Morgan was throughout intended for the public branch of horticulture, and commenced his career in the Parks Department of the Borough of Crewe under his father, Mr. M. Morgan, the Superintendent. A period of five years was spent at Crewe, during which time he also received a clerical and surveying training, and attended Manchester University for botany classes; this was followed by a term at the R.H.S. Gardens, Wisley, under the late Mr. S. T. Wright. From Wisley he went to Mesopotamia on war service, and was transferred to the Civil Administration as Assistant to the Deputy Director of Agriculture for Iraq. At the close of the war he joined the landscape staff of Messrs. Dicksons, of Chester, as assistant, and here obtained further landscape experience in all branches of the work. In 1919, he received an appointment under Mr. W. W. Pettigrew, at Manchester, and up to the time of his present appointment had been Horticultural and General Assistant under Mr. Pettigrew. During this period, following the war, the Manchester Parks Department carried out works costing nearly £400,000, mainly for the relief of unemployment, and it was Mr. Morgan's duty to prepare the plans, estimates and detailed requirements, and to set out and supervise the work in general on the site. In addition, his duties included the laying out of recreation and ornamental areas, and street-tree planting for other Committees of the Corporation and various other authorities, including the very extensive work of the housing estates of the city. Mr. L. E. Morgan holds the National Diploma in Horticulture in public park gardening, and is a frequent lecturer on the subject. He is supposed to be the first to lecture on horticulture through the microphone; this was in January, 1922, from the Westinghouse Station. His activities on behalf of the staff of the Manchester Parks Department are known to our readers, as he inaugurated the Staff Society, the first of its kind. His efforts on behalf of the juniors of the Manchester Parks Department in arranging classes and other instructional facilities, including the series of authoritative lectures and the *Journal* of the Society, have been greatly appreciated by the whole staff, all of whom join in good wishes to Mr. Morgan on his new appointment.



MR. L. E. MORGAN, N. D. HORT.

British Science Guild.—Under the auspices of the British Science Guild, and in connection with developments of British Chemical Manufactures, a public meeting will be held at the Mansion House, London, on Wednesday, April 24, when Lord Melchett, F.R.S., President of the Guild, will preside, at 4.30 p.m. The speakers include Sir Frederick Keeble, C.B.E., F.R.S., who will deal with "Fertilisers from the Air," Mr. A. V. Shearer, who will discuss "Rayon (Artificial Silk)," and Mr. Francis H. Carr, who will discuss "Synthetic Drugs."

Olive-growing in Spain.—An interesting review of the Spanish Olive-growing industry appears in the *Monthly Bulletin of Agricultural Science and Practice*, Part I, and important facts are given relating to the development and present-day importance of Olive culture. Spain is stated to be the chief Olive-growing country, and the one in which the cultivation of this fruit is most highly developed. It produces about half the total production of the world, and the industry is still being developed. Olives are grown throughout the whole Peninsula, with the exception of the north-western district, the total area at present under Olives being 1,759,215 hectares; the average annual production of oil is 3,487,000 quintals, at a gross value of about 700 million pesetas. There are, approximately, 160 million Olive trees in Spain (an average of 91 trees per hectare of cultivated land); the highest proportion is reached in Cuenca, with an average of 207 trees per hectare, and the lowest in Orensa and Tarragona, with 46 and 56 trees per hectare, respectively. Seville is the centre of the Olive-preserving industry, about 140,000 quintals of Olives being bottled annually in this district for export; Cordova is next with 90,000 quintals. About thirty varieties of Olives are cultivated in Spain; the wild Olive, which grows in the mountains and fields and is called Acebuche, is seldom employed for oil extraction, but is frequently used for pig fattening. The most important commercial varieties are:—Picuda, late-fruiting and a heavy bearer; Cornezeula, which is most tolerant of low temperatures, produces a good quality oil, and is grown chiefly in the central districts; Verdial, a late variety, highly resistant to cold and drought, and yielding a high percentage of oil; Morcaleña, a fair cropper, whose fruits are grown more for consumption than for oil, which is of inferior quality; Arbequina, early maturing, and a heavy yielder of good quality oil; Bellotuda, rather late, and suitable for all soils; Lechin, a good cropper and resistant to cold, grown chiefly in Andalusia; Zorzaleña, the most important Olive of Seville, where it forms seventy per cent. of the Olive yards, cropping abundantly and regularly and yielding an excellent oil; Racimas, early, giving oil of medium quality, grown in Caceres but little elsewhere; Cordovi, not grown widely, but desirable as its fruits are suitable for consumption when green; Rapa Sayos, produces little, but very high quality oil, which is valued as a substitute for butter, while its fruits are also preserved; Manzanilla, grown for both oil production and preserving, and tolerant of cold, but not heat; and Cordal Sevillana, much prized for its fruits—the largest—which are preserved and exported in considerable quantities. The usual methods of propagating Olives in Spain are by cuttings, "garrotes," suckers, layers and root-cuttings, seeds and grafting. Prunings are frequently utilised as cuttings, but this method of increase is not employed generally; it is confined chiefly to the vale of the Betis. Propagation by "garrotes" is the method employed most extensively. Two or three Olive twigs are placed horizontally at the bottom of a hole and covered with soil (usually during February and March), and these produce plants rapidly and at low cost. The raising of Olives from seeds is limited, at present, to some very encouraging experiments at certain experimental stations under the Spanish Ministry of Agriculture. In Spain, the Olive is often grown in association with other commercial crops; with the Grape, Almond, or the Carob, in the east; the Hazel, in Catalonia; and with cereals or legumes in Castile and Andalusia. Pruning is the most important operation in connection with Olive culture, and is practised assiduously in Spain. Until the tree is fully developed, "formation" pruning—shortening all secondary and tertiary growths—is practised, and once the tree commences to bear it is thinned and pruned regularly after the harvest. During the summer, any basal or trunk growths which may appear are removed. Like cultivators of other fruits, the Olive-grower would appear to have many pests and diseases to contend with; it would seem that the Olive fly (Dacus oleae), is the most destructive pest, for we are informed that the total losses caused by it represent about five per cent. of the value of the average Olive yield.

Mr. Percy F. Bunyard.—At a recent meeting of the Council of the British Carnation Society, it was unanimously decided to elect Mr. Percy F. Bunyard an Honorary Life Member of the Society, and to present him with a Gold Medal, suitably engraved, in recognition of his valuable services as Hon. Secretary to the Society for the past ten years.

The "Ideal" Apple and Pear Grader.—Fruit growers and representatives of the Fruit and Vegetable Committee of the National Farmers' Union, to the number of about thirty, recently attended, by invitation, a preliminary demonstration of the "Ideal" Apple and Pear Grader, arranged by the Ministry of Agriculture. This grader is of a type used extensively in America, and differs in principle from the better-known Cutler Grader in that sizing is done by diameter, and not by weight. The possibilities of this machine for grading Pears was a matter of general comment. It is intended to give further working demonstrations of this machine in the provinces as opportunity offers.

Wolverhampton Floral Fête.—West Park is, as usual, to be the venue of this year's Floral Fête at Wolverhampton, which will take place on July 16, 17 and 18. The newly-issued Schedule of classes and prizes shows little variation from that of preceding years, except that prizes in general are of increased value, and an entirely new class has been provided for a group of Fuchsias, staged on a space twelve feet by four feet, for which the prizes are £5, £3, £2 and £1, respectively. A special feature this year will be the provision of twenty-eight classes for outdoor exhibits of garden tools and furniture, the prizes in these being medals or Awards of Merit. The usual handsome challenge trophies are offered for special displays and for the best non-competitive exhibits. The Wolverhampton Floral Fête of 1928 was visited by over 60,000 people.

Appointments for the Ensuing Week.—TUESDAY, APRIL 23: Royal Horticultural Society's Committees meet (two days); Cornwall Spring Flower Show (two days); National Bulb Society's Daffodil and Tulip Exhibition (three days). WEDNESDAY, APRIL 24: Newcastle and District Horticultural Society's meeting; Brentford and District Spring Show; Royal Dutch Society for Gardening and Botany's Rotterdam Spring Show (five days). SATURDAY, APRIL 27: Leeds Paxton Society's lecture.

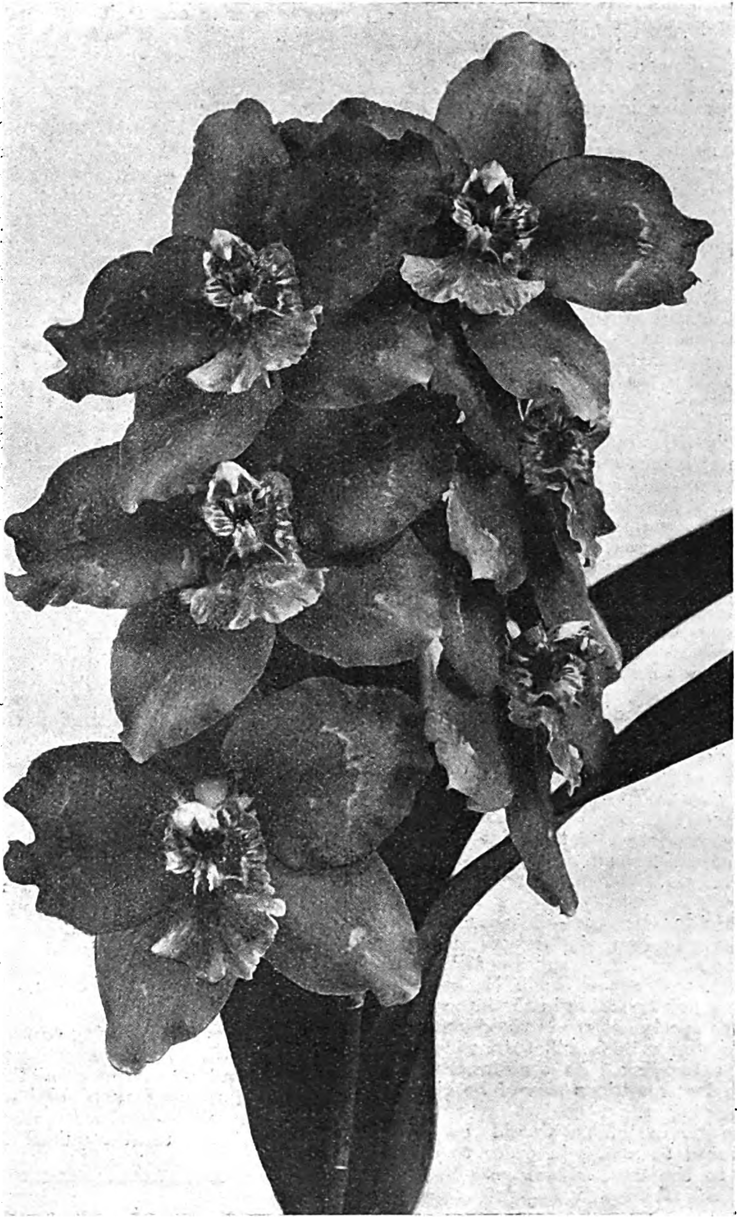


FIG. 147.—ODONTIODA BLUEBELL.

R.H.S. Award of Merit, April 9. Flowers rose-purple, violet-tinted and crimson-shaded.

Shown by Gus Mayer, Esq. (gr. Mr. R. Cottam), Wistler's Wood, Woldingham.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Effects of the late Winter.*—The temperature here, on January 3, 1854, fell 4° below zero, and on the grass 6° below zero, whilst in the valley in the neighbourhood it was 8° below zero. From our own grounds we have cut down above a hundred cart-loads of dead trees within the last month. Cedrus Deodara, every leaf fallen off and some boughs killed, but the plants are recovering rapidly; Cedar of Lebanon, slightly injured; Mount Atlas Cedar, injured; Acuba japonica, much injured, some plants killed to the ground; Viburnum Tinus almost all killed, the bark of the thick wood having been burst by the frost; Arbutus Unedo, all killed, some specimens were thirty years old, the bark forced off the trees by the frost; Pinus Cembra, not injured; P. excelsa, slightly injured; P. insignis, injured; P. Lambertiana, slightly injured; P. Laricio, slightly injured; P. Pinaster, not injured; P. Pinea, injured; Larix pendula, not injured; Abies canadensis, not injured; A. cephalonica, not injured; A. Menziesi, not injured; A. Morinda, not injured; A. Nordmaniana, not injured; A. Pindrow, not injured; A. Pinsapo, not injured; Araucaria imbricata, many killed; Quercus suber, much injured; Q. ilex (Evergreen Oak), many killed, some plants fifty years old dead; Erica mediterranea, much injured; Ilex aquifolium, many killed, all more or less injured, mostly the lower six feet of the trees are quite dead, making nearly all the trees standards; Cupressus funebris, much injured; C. Goveniana, ditto; C. horizontalis, ditto; C. thurifera, killed; C. torulosa, killed; Cryptomeria japonica, not injured; Yucca gloriosa, very much injured, all the branches killed, together with a portion of the stem; Buxus chinensis, killed; B. argentea, injured; Cerasus lusitanica, many killed; Laurus nobilis, killed; L. regalis, many killed; Roses, China and Tea-scented, many killed; Libocedrus chilensis, injured; Hedera Helix, injured; Ulex europaeus, many killed; U. e. flore pleno, ditto; Ligustrum vulgare, injured; Alexandrian Laurel, much injured; Phillyrea angustifolia, trees twenty years old, killed; P. media, ditto; Juniperus chinensis, not injured; J. communis, injured; J. excelsa, uninjured; J. recurva, ditto; J. Sabina, much injured; Taxodium sempervirens, scarcely injured; Tulip Tree, slightly injured; Rhododendrons, many killed, even the Pontic varieties injured; Garrya elliptica, nearly killed; G. laurifolia, killed; Yew (common) some injured; Walnut, ditto. Bees in many hives frozen to death, with nearly 20 lbs. of honey in them. I might have swollen this list, but the above will be sufficient to show that we have not, for fifty years at least, had such a severe cold. It is worthy of remark that in one place, near Nottingham (Watnal), the Bay Tree has not been injured. Probably no part of England has suffered to the extent that we have near here, especially between this place and the Earl of Harrington's and Newark. *E. J. Lowe, Highfield House Observatory, near Nottingham, April 10. Gard. Chron., April 22, 1854.*

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Cycnoches, Catasetums and Mormodes.—For cultural purposes these deciduous Orchids require similar treatment, although their habits of flowering are slightly different. Cycnoches develop their flowers from the axils of the leaves on the upper part of the newly-made pseudo-bulb, while species of the other genera usually produce their flowers from the bases of the pseudo-bulbs. Plants which have been resting in an airy position in the intermediate house since maturing their growths in the autumn, are now commencing to grow, and repotting may be done forthwith. Turn the plants out of their receptacles, remove all old compost, and cut away all decayed roots and useless pseudo-bulbs, after which place them in well-drained pots or pans in a compost of equal parts of Osmunda and A.1. fibres, one part Sphagnum-moss, and a little fibrous loam, adding crushed crocks or charcoal to keep it porous. Avoid over-potting, but make the soil firm; keep the bases of the pseudo-bulbs level with the pot rim and just in contact with the compost. Very little water is needed until the new roots are well established in the soil. These Orchids delight in moist surroundings and a light position in the warmest house, only lightly shaded from strong sunshine, in the early stages of growth. Care should be taken not to allow any moisture to collect in the young growths or decay will quickly set in. Later on, as the leaves become fully developed, full exposure to the sunlight is necessary to ripen the growths, and at this stage the plants should receive plenty of water, until the leaves turn yellow and commence to fall, when they should be removed to a light and airy position, in a cooler atmosphere, to rest.

Chysis.—Members of this genus require careful attention as they start into growth, as the flower buds are produced simultaneously with the young growths. Water should be afforded very carefully and sparingly until both are well advanced, as the buds are easily damaged by water; in other respects, this Orchid succeeds well under conditions similar to those advised for Cycnoches, etc.

Dendrobium densiflorum.—This easily-grown, evergreen Dendrobium, in several varieties, is now producing its racemes of beautiful flowers, which will develop well if the plants are grown in a light position in the intermediate house. If the specimens are watered heavily at the roots the flower buds will turn yellow and drop before expanding. As the flowers open, drier and cooler conditions should be given to assist in keeping them perfect over a long period. The pseudo-bulbs should be spread out and secured to stakes in order to display the flowers to the best advantage.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Thinning the Fruits.—This operation demands quite as much study as disbudding. When Peaches and Apricots set their fruits very thickly the trees should be gone over at the earliest possible moment, and relieved of all badly placed and small fruits, repeating the operation in a few days, and leaving only a few over a full crop; this surplus should be removed after the stoning period. The final distance apart to leave the fruits will depend very much, on the strength and vigour of the tree. Overcropping not only exhausts the trees but leads, undoubtedly, to biennial bearing, which is not good culture or satisfactory in the least. Peaches may be finally thinned down to one fruit per square foot of wall surface to obtain the finest specimens, while Nectarines may have two fruits, and Apricots three or four fruits, to the same amount of wall surface.

Pears.—Many Pear trees are blossoming profusely this year, which is not always a good omen, particularly with weak trees, for it is well-known that a superabundance of flowers is a disadvantage in that it wastes energy, to the detriment of the tree and the crop. Where there is a heavy set of fruits on such weak trees, the earliest opportunity should be taken, where practicable, to relieve the trees of all surplus fruitlets. In many cases whole trusses can be spared, and in others the reduction of the trusses to one fruit will greatly relieve the strain.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Strawberries.—As the sun gains power these plants will require greater quantities of tepid water and copious syringings twice a day. If forced under favourable conditions—plenty of light and heat, and liberal ventilation—the fruits will set freely, and if this treatment is continued, the fruits will attain good size and a well-finished appearance. As batches of Strawberries are removed from the shelves in vineries and Peach houses they should not be replenished; light pits in which a moist, warm atmosphere may be maintained should be employed for the successional batches, to guard them against early attacks of red spider. Plants in the early stages, and late in the season, will do much better in pits than upon dry shelves, where watering two or three times a day soon washes all the goodness out of the soil. Late plants, to produce a supply of fruits during May, should be allowed plenty of room, and should be kept close to the glass in a cold pit, or, better still, in a pit with a hot-water pipe running along the front. These pits are well adapted for Strawberry growing, and plants in them should produce remarkably fine fruits and maintain a succession until early varieties are ripe in the open. If the pits are shallow the pots may be placed four inches apart on ashes, or partly plunged; air should be admitted freely in mild weather, and unless the elements are unfavourable, fire-heat may be dispensed with until the plants come into flower, when gentle warmth will be essential, also a free circulation of fresh air to dispel stagnant moisture. Once the fruits have set, fire-heat may again be dispensed with. The fruit trusses should be well thinned, but the pots must not be disturbed, as much benefit will be derived from roots which escape through the crocks into the ashes. Early morning is the best time to water and feed the plants, and very little syringing will be necessary, as early closing to trap the sun-heat will keep the atmosphere sufficiently moist. Early forced plants intended for planting out should be syringed with sulphur water to free them from mildew and red spider, and should be watered freely until required for planting.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Flowering Plants for the Water Garden.—Among flowering plants there are many that may, with advantage, be grown in bold masses, and extremely fine effects are secured if their colours are reflected in the water. Few subjects are better than the tall, purple-flowered Lythrum salicaria var. superbum. For yellow, there is Senecio Clivorum, S. Wilsonianus and S. Veitchianus. When bright scarlet is desired, Lychnis chalcedonica and Lobelia cardinalis will be found suitable, while Rodgersia's, with their large, bronzy foliage, are choice subjects for employment where peaty loam is available. Saxifraga peltata, with heads of pink flowers which are succeeded by large, circular leaves, and Petasites japonicus, are happy on the moist banks of streams and ponds, and Spiraea gigantea, S. g. var. rosea, S. Aruncus, S. palmata and the numerous Astilbe species and hybrids, are all ideal subjects for such positions. The many species and varieties of Trollius are never seen to the best advantage unless planted by the waterside, where they develop a vigour quite astonishing compared to those grown in the herbaceous border. Primulas, such as P. japonica, P. Bulleyana, P. pulverulenta, P. Florindae, P. helodoxa and P. rosea, love the moist edges of ponds or streams and most of them will soon naturalise themselves if conditions are favourable. No planting by the waterside would be complete without large drifts of Iris Kaempferi; these, producing in June and July their large, Clematis-like flowers in conjunction with luxuriant foliage, give a fine effect. They do not like lime in the soil, nor too much moisture at the roots during the dormant season; therefore, if possible, the water-level should be lowered during winter. Iris siberica and its varieties Emperor and Perry's Blue, are also desirable, likewise Iris orientalis and I. o. var. Snow Queen; Plants suitable for planting in water of from three to twelve inches depth are fairly plentiful. A beautiful native plant is to be found in the Flowering Rush, Butomus umbellatus, which grows and flowers freely if planted in shallow water, while Pontederia cordata, a handsome American aquatic, with long spikes of bright blue flowers and erect leaves, is specially suitable for this purpose, as also are Sagittaria sagittifolia and S. gracilis, both of which require plenty of room. Menyanthes trifoliata, with sweetly-scented, pale pink flowers, is a rampant grower and requires keeping in check, while Caltha palustris, the Marsh Marigold, and, for those who like it, the double-flowered form, may also be grown in the shallowest water. In the milder districts no water garden would be complete without good groups of the well-known Arum (Richardia africana); a severe winter such as the last will result in it being cut down, but the roots below the water surface are seldom destroyed, and new leaves and flowers will be produced freely. Scirpus lacustris is uncommon, and is quite effective in shallow water. Shady nooks by the waterside may be furnished with Ferns and various other shade-loving plants. Among the former, besides the noble Osmunda regalis, the various forms of the Lady Fern are most desirable. In such positions also the Himalayan Meconopsis Wallichii, such Primulas as P. sikkimensis, P. microdonta, and P. m. var. violacea; Trillium grandiflorum, and Lilium pardalinum, will be quite at home and be seen at their best.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Camellias.—Although Camellias are not grown so extensively as in former years, yet they are useful subjects for the cool greenhouse. They may be grown in receptacles or planted out in small borders and trained up walls; they thrive best in a house from which frost is just excluded Plants which need repotting may now receive attention. The compost for them should consist of equal parts good fibrous loam and peat, with sufficient broken bricks, charcoal and sharp sand to ensure efficient drainage. Those planted out in borders may receive a surface dressing of a similar compost after a small portion of the surface soil has been removed.

Caladiums.—Corms that have come safely through their resting period should now be shaken out from the old compost and placed in boxes filled chiefly with fine leaf-mould and sharp sand, and when growth is active they may be potted. The weaker-growing varieties should be grown in smaller pots than the strong-growing sorts. During their early stages of growth a moist atmosphere should be maintained and the plants should be shaded from bright sunshine, but once the leaves have developed well they may inured gradually to cooler conditions and stood in a warm greenhouse, where they will keep in good condition for a long period.

Lachenalias.—Success in the culture of Lachenalias depends very largely on the treatment they receive after flowering. Water should be given until such time as the leaves turn quite yellow, when moisture should be withheld altogether and the receptacles placed on a shelf in a cool greenhouse, or in a frame which is fully exposed to the sun. It is most essential at this stage that they should be kept absolutely dry; should moisture come in contact with the bulbs, this will start them into growth and the flowering quality and general health of the bulbs will be impaired.

Primula sinensis flore plena.—Where this old double Primula is grown, the plants will have passed out of flower, and should be prepared for propagating, as this variety cannot be raised from seeds. The bottom leaves should be cut away carefully and a slit made with a sharp knife in each division of the stem, in an upward direction, placing a small piece of crock in each cut to keep it open. The plant should then be packed around with Sphagnum-moss, leaf-mould and sand, to encourage roots to develop. When it is found that roots have formed, the plants should be pulled to pieces carefully and each growth potted singly in a sharp, open compost. I have always found it advisable to stand the young plants in a propagating frame for a short time after potting, but they should not remain in a closed frame for any length of time or they may damp off.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Cauliflowers.—Plants that were raised under glass and pricked out into boxes or frames should now be ready for planting in ground that has received a fair dressing of well-decayed manure. Allow two feet between the lines and plant them eighteen inches apart, watering them well when the bed is finished.

Onions.—If seeds were sown in January, a good stock of fine, sturdy plants should now be ready for hardening off, by being exposed fully, before planting them out. The bed should be prepared for them now; the soil should be broken up finely by forking and then made level and firm—the latter by treading in preference to rolling. So soon as they are hardened off sufficiently, the first opportunity should be taken advantage of to plant them, so as to secure a good ball of soil with the roots, which should be disturbed so little as possible. If decayed manure was placed in the bottom of the boxes when the seedlings were pricked out, very little root disturbance should accrue when planting them.

Runner Beans.—Seeds of Runner Beans may be sown in boxes and germinated in heat, but when the seedlings are about two inches high, they should be transferred to a cool frame, to retard growth so much as possible. The ground for them should now receive final preparation, by being lightly forked and raked, and later, when the seedlings have been planted, no time should be lost in staking them, as the stakes will afford them valuable protection from cold winds and late frosts, which often do considerable damage to seedling Runner Beans.

Cardoons.—Seeds of Cardoons may now be sown. They should be sown singly in three-inch pots and started in a frame. Trenches for Cardoons should be prepared in the same way as for Celery, the after treatment of the two crops in the matter of hoeing and earthing being similar.

Late Potatos.—The ground should be prepared for the late Potatos, and the planting of them proceeded with forthwith. Some varieties give more satisfactory results than others in certain soils, therefore if any doubt exists as to the most suitable sort to grow, several varieties should be employed with a view to determining the best cropper.

Water Cress.—If special facilities for cultivating Water Cress are not available, and a bed is desired, the difficulty may be overcome by planting it in trenches in a shady corner of the garden. The seeds may be sown in five-inch pots and germinated under glass, planting the seedlings out after hardening them off, and keeping them damp by spraying them overhead occasionally. By this method a good crop of Water Cress may be secured.

Lettuces.—The Lettuce seedlings in boxes, so soon as they are large enough and before they become spindly, should be planted out. When planted, they should be given a thorough watering.

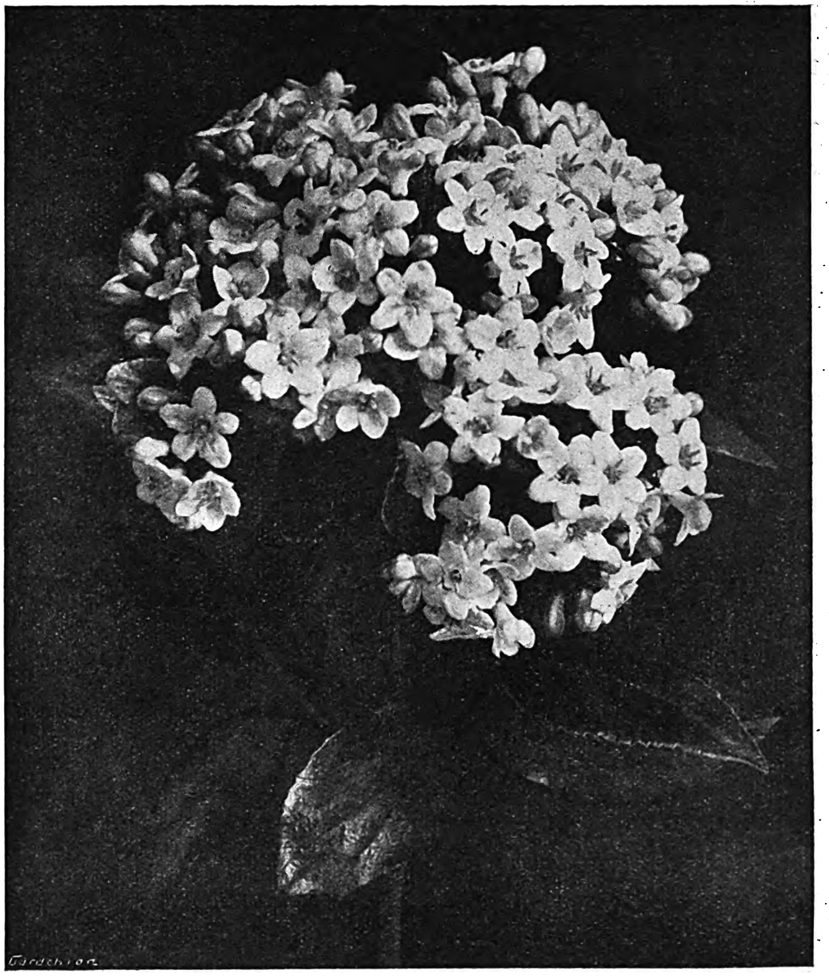


FIG. 148.—VIBURNUM BURKWOODII.

R.H.S. Award of Merit, April 9. (V. utile x V. Carlesii). Flowers white, fragrant.

Shown by Messrs. Burkwood and Shipwith (see p. 285).

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemount, Monkton, Ayrshire.

Vegetables.—Early Peas should be supplied with stakes or other supports before they begin to fall over. Cultivate along the rows on both sides with a fork and draw a little soil up to the plants before staking them. If trainers are used, a few branches or twigs should be placed in the centre of the row to support the plants until they take possession of the wires. If the seeds have germinated well it may be necessary to thin the seedlings severely prior to staking. Parsley raised in boxes may be planted out now if well hardened off; in fact, it is inadvisable to delay this operation, as the fairly cool conditions generally obtaining in April enable the plants to establish themselves before protracted dry weather occurs. Deeply-trenched ground is best for Parsley, and where drying off in summer is prevalent, leaf-mould incorporated with the staple soil is advantageous; lime in some form should also be applied in such cases, and at this season air-slaked lime in powder form is safest. As seedlings of all kinds of vegetables make their appearance, hoe frequently between the rows with the Dutch hoe to aerate the soil and prevent weeds from making headway. The Planet Junior Hoe or, in small areas, the Buco cultivator, should be used between crops of Potatos, Brassicas, Seakale, etc., alternately with the Dutch hoe.

Peaches on Early Walls.—As the young growths appear on these trees no time should be lost in removing part of the unwanted or misplaced shoots. Those facing to or directly away from the wall, should be removed at the first operation, and at intervals of five or six days the remainder should be thinned until the requisite number only is left; generally a leader, and one at the base of each shoot, on its upper side. Should mildew make its appearance, spray at once with a very weak solution of lime-sulphur. I find one in one hundred effective; if used stronger, many of the soft young leaves drop.

Seedlings.—Any seedlings in boxes and frames should be kept growing freely by frequent stirring of the surface. Remove all weeds and keep the plants dwarf by pinching or cutting them back where practicable, as in the case of Lobelia, Alyssum, Verbena, Ageratum, etc. As the seedlings approach planting size remove those in boxes to the open and harden them off, but have protection at hand in case of night frosts. Those in frames should have the lights removed or drawn back entirely.

INDOOR PLANTS.

ASTERS AS POT PLANTS.

Asters belong rather to the flower garden than the greenhouse, but as they are valuable for greenhouse and conservatory decoration when grown well in pots, a few words on their cultivation for this purpose may not be out of place at the present time. It is important that the plants should be grown under the most natural conditions possible during the whole period of growth, thus artificial heat should be avoided, and the plants should be given cool, buoyant atmospheric conditions. The seeds may be sown in April in a cold frame, and more satisfactory results are obtained by growing the plants on in cold frames, where they may stand on a cool, moist bottom, than by placing them on a stage in a warm house.

Asters require moderately rich soil to do them justice, and the compost in which they succeed best when in pots is three parts good turfy loam and one part decayed manure. Five-inch or six-inch pots are suitable sizes, growing two plants in a five-inch, and three in a six-inch pot. The pots should be well-drained and filled moderately firmly with the prepared compost, when the seedling plants may be pricked out near the edge as required. The pots may then be placed in a cold frame or plunged in ashes outside. So soon as they are filled with roots, abundance of water and occasional doses of dilute liquid manure will materially assist the production of good specimens. When the flowers begin to show colour the plants may be taken to the conservatory, where they make a bright display for a considerable period. The best for pot culture are the Chrysanthemum- and Paeony-flowered sections, but the Single-flowered types also make graceful and highly decorative plants. *W. A.*

ORCHID NOTES AND GLEANINGS.

HAEMARIA DISCOLOR.

This member of the Order Orchidaceae is rare, and is seldom seen in cultivation. The white flowers are three-quarters-of-an-inch across and have a lemon-yellow blotch in the centre of the lower lip; they are borne in an erect spike, which is furnished with a number of crimson-coloured bracts.

The leaves are dark olive-green on the upper surface, with a thin white mark down the centre of each, while the under surface is reddish, which fact gives to the plant its name Haemaria. The entire leaf has quite a velvety appearance and is somewhat fleshy.

It is advisable to make up fresh specimens of this Orchid each year. This is done by taking cuttings that have a small number of roots already attached, and putting them in shallow pans. The compost should be one of well drained peat, sand and a little loam. The plants require a liberal supply of water at the roots during the growing state, and will commence flowering early in January.

Haemaria discolor is best grown under a bell-glass, which should be stood on three or four inverted sixty-sized pots. *F. H. Wright, University Botanic Gardens, Cambridge.*

RENANTHERAS.

Few Orchids are more easy of cultivation, or more floriferous, than the Renantheras, or Scorpion Orchids, as they are termed. The stems are terete, woody, and usually about a quarter-of-an-inch in diameter, and they emit long, greyish roots from the nodes. They often attain to a length of twenty-five to thirty feet. The leaves are coriaceous and oblong, while the flowers, which are of large size and brilliant colour, are produced in large panicles. The species here mentioned are found in the Malayan Chinese region.

R. Arachnites (syn. Aracnanthe moschifera) has flowers three inches across, the sepals and petals green, with blotches of brown, and the lip white. Owing to the curved lateral sepals and the straight upper one, this species is commonly known as the "Scorpion Orchid." It is a native of Malaya, and is cultivated to a large extent. It possesses a strong, Musk-like scent.

R. coccinea is a species from Cochin China. It is a vigorous plant but rarely exceeds twelve feet in length, while it produces large and much-branched panicles of numerous scarlet flowers, mottled with yellow; these are about two inches in diameter, and have oblong, spathulate and obtuse lateral petals.

R. Maingayi is not so fragrant as the others, and it has smaller leaves, which are seldom more than five inches long and one-and-a-half inch wide. The flowers are arranged in loose panicles and vary in colour. The sepals are linear-oblong and about one-and-a-half inch long, while the petals are curved at the apex and mottled pink or white, the lip being broad, pink, with darker stripes, and sometimes yellow blotches on the side lobes. It is a very beautiful species, but not so floriferous as the former. R. Maingayi is found in Malacca, Jahore, and in other parts of the Malay Peninsula.

R. matutina is dwarfer than the preceding species; it has speckled stems one foot to two feet long, clothed with narrow, ligulate leaves. The scape is about fifteen inches long and often branched. The flowers are loosely disposed about twenty to each spray; they are about two inches across, red or orange, spotted with darker colour, the lip being white with a red centre. It is found in Perak, but is more common in Borneo.

These Orchids are very popular for house decoration, as the flowering sprays last a long time when cut.

They may be propagated by cuttings taken from the growing ends of the stems. *F. S. Banfield, F.L.S., Malaya.*

ALPINE GARDEN.

ALPINE CAMPANULAS.

I have read with the keenest pleasure the admirable article on "Alpine Campanulas," by *M. W.* (p. 263), and am in general agreement with your able contributor. In the course of the article, he refers to the question as to whether C. turbinata is, or is not, a distinct species, or only a form of C. carpatica. It is a question which has given rise to much discussion, and still remains unsettled. I am always inclined to the view that it is either a species or a natural hybrid of unknown origin. It is constant in its ways, and one noticeable feature of the true C. turbinata is that it has never more than a single flower on a stem; while the foliage is hairy, that of C. carpatica being smoother. These features are constant, and seedlings seem to maintain them, so well as plants propagated by division. C. turbinata, true, is a much choicer plant than C. carpatica, and it is a pity that the true plant is so scarce, and that C. carpatica is substituted for it in many nurseries. I do not recollect ever seeing any one tell where C. turbinata is to be found wild. This might settle the question, or, at least, help to do so, as we might learn if C. carpatica and C. turbinata are found together or near each other. C. turbinata is one of our best alpine Campanulas.

By the way, *M. W.* appears to retain the name of C. pusilla for the Campanulas usually grown under that name, instead of adopting C. Bellardii after the fashion of the late Reginald Farrer, and as he does in the case of C. Bellardii Miranda. *S. Arnott.*

PRIMULA SUFFRUTESCENS.

This is an interesting plant inasmuch as it belongs to the sub-shrubby class of Primula. A native of the central Rockies, and almost the sole representative of the Cuneifolia section of Primulas, this species has a semi-prostrate habit, the woody branches trailing about the ground. These are sparsely furnished with tufted rosettes of dull green, glossy leaves which are long and narrow, widening at the tip like an elongated wedge. From the centre of these tufts a slender flowering stalk appears in early summer, this terminating at a height of about six inches in a small, loose head of pale rose-pink flowers, each with an orange eye. There is a suggestion of P. rosea in these blossoms, but the latter have not so brilliant a colour as the waterside plant.

P. suffrutescens is a plant that might be more often seen in gardens, for it is hardy and not really difficult. A light, gritty soil (or sandy peat) which does not get too dry in summer suits it. Full sun is desirable, as is freedom from tree-drip and excessive winter wet. The only troublesome part about the cultivation of P. suffrutescens is in propagation. It does not offer any opportunity of division, seeds do not ripen with me, and cuttings do not root readily. Still, the latter are by no means impossible, even without bottom heat, and another means of securing fresh plants is by layering some of the branches in very sandy peat. *J.*

ARENARIA BALEARICA.

There are some plants which unaccountably find their way into gardens, and yet are appreciated so much as to rank with those indispensable treasures for which comparatively large sums of money are paid. The Balearic Sandwort is one which commands attention, for, although the reverse of pretentious, it has a flair for cropping up in unexpected places and from sources of unknown origin. Once in possession of a suitable situation, this species need not be lost; as a "garden escape" it is pre-eminent, and fortunately it frequently strays into a good home. People who are actively engaged in horticulture are continually being asked to name the plant, sometimes with the aid of living material, but more often from a vague, although quite enthusiastic description, such as "a perfectly delightful creeping plant with small leaves and white flowers."

Scattered about in rock gardens all over the country, this frail little gem has settled down wherever possible. Barely discernible during the dull days of winter, it covers the rock in early spring with a wandering, thread-like network of stems, set with minute, rounded, fresh green leaves, and later on dotted with a multitude of tiny white stars, barely one-eighth-of-an-inch across and borne on half-inch stems that are fragile, yet wiry enough to hold the blossoms well above the mat of leaves. The flowering season extends right through the summer months, from late spring until October.

A. balearica appears to be most at home in a moist position, but it appreciates sunlight, and will grow profusely on either limestone or sandstone. Although it does not require much soil in which to grow, it will at times become so luxuriant as to clothe the rocks with a thick, green sward and then spread out over the soil until it becomes a danger to other plants. In such circumstances, it is fortunate that A. balearica does not object to drastic restriction; it should certainly be kept within bounds, but not destroyed unless it is taking possession of the whole garden. In fact, this charming native of the Balearic Islands, which is so accommodating and free-growing in our climate, should be planted with discretion, and is best kept to that part of the rock garden where the choicest varieties are not grown, and where it can ramble about more or less at will. *L. B. C.*

PLANTS NEW OR NOTEWORTHY.

WATSONIA BEATRICIS.

To those who only know the white or rose-coloured species of Watsonia, the subject of this note will be something of a revelation, for the colour of the petals is as uncommon as it is remarkable. It is described in the *Botanical Magazine*[*] as perigone-scarlet, with the limb (of the flower) verging to orange, and by Matthews and L. Bolus[†] as rich apricot-red;

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[*] Vol. CLII, t. 9139.

[†] *Ann. Bolus Herb.*, IV, p. 52 (1926).

while Mrs. Dudley Ryder, whom we have to thank for the introduction of the plant to this country, describes it as a hot, dense apricot.

W. Beatricis (Fig. 149) is a new species named after Beatrice Hops, who found it in the district of George, Cape Colony, and it was recently published by Matthews and Bolus *. The plant first flowered in this country early in September, 1925, in the garden of the Hon. Mrs. A. Dudley Ryder, at Durns, on the northern shore of the Solent, between Lymington and Beaulieu, and was sent to the writer to be submitted to the R.H.S. Floral Committee as Watsonia Pillansii. In view, however, of the beauty of the plant, and its novelty, it was placed in Miss L. Snelling's hands in order that a drawing might be made of it, and next day was sent to Mrs. Bolus, the distinguished Curator of the Bolus Herbarium at Kirstenbosch, who was then working in the Herbarium at Kew. Mrs. Bolus recognised the plant as W. Beatricis, which has flowered for several years in the National Botanic Gardens at Kirstenbosch, South Africa, but had not been formally published.

When Mrs. Ryder first saw W. Beatricis on February 6, 1923, it was in full flower near George, in low-lying ground, growing in coarse grass, and sometimes among rushes, but not in boggy places. The seeds were not then ripe, but after her return to England, Mrs. Ryder received seeds of the Watsonia from Mrs. Vincente, who lives at George. These were sown at Durns in May, 1923, and plants flowered in 1925. It was from one of these plants that the plate in the *Botanical Magazine* was drawn by Miss Snelling, and the description prepared by Dr. Stapf.

W. Beatricis grows freely on the veldt between George and Knysna, and in 1927, Mrs. Ryder saw the species in flower again, at the Cape, towards the end of December, but owing to the great drought which prevailed in South Africa at that time, the foliage, which is peculiarly beautiful, was browned and the plants were stunted. A peculiarity of the species is the solid, waxy character of the petals, which are not in the least of papery consistency like those of Watsonia rosea, for example. The flowers are set on the stem with a mathematical regularity approaching that of an ear of Wheat.

The hardiness of the Watsonia genus in general in Britain has long been suspect, and probably rightly so, or else some members of it would be more often seen outside greenhouses than they are. One or two are perennial in maritime gardens on the south and west coasts, and in parts of Ireland, but even W. Ardernei seldom stays long in inland gardens. This may, perhaps, be because it begins to grow anew in the autumn soon after the flowers have withered, so that the new growth is at the mercy of winter frosts of more than a few degrees. Like many South African plants, too, it probably finds our average allowance of sun too little for its comfort, and it certainly enjoys itself in hot summers like those of 1911, 1921 and 1928. In that respect it is like Amaryllis Belladonna, and a good flowering season for one is usually equally appreciated by the other.

Mrs. Ryder tells me that W. Beatricis has come through the severe winter successfully in a boggy place in her garden, where frosts of so much as 21° were frequent in March. A curious point about this Watsonia is the remarkable way it has adapted itself already to our climate. At the Cape, Mrs. Ryder found the species in bloom in February, yet the plants she has raised here from seeds of the February-flowering Cape plants, do not come into bloom until September. At the end of March corms of Mrs. Ryder's plants were just beginning to push up new growths—a few weeks after their relatives at the Cape had finished flowering!

There is something about those members of the family that we know here which leads one to suppose they may be calcifugal, and when they flourish in Britain it usually seems to be in humus.

The illustration (Fig. 149) has been reproduced from the drawing prepared by Miss L. Snelling for the *Botanical Magazine*, and is published by courtesy of the Royal Horticultural Society.
A. Grove.

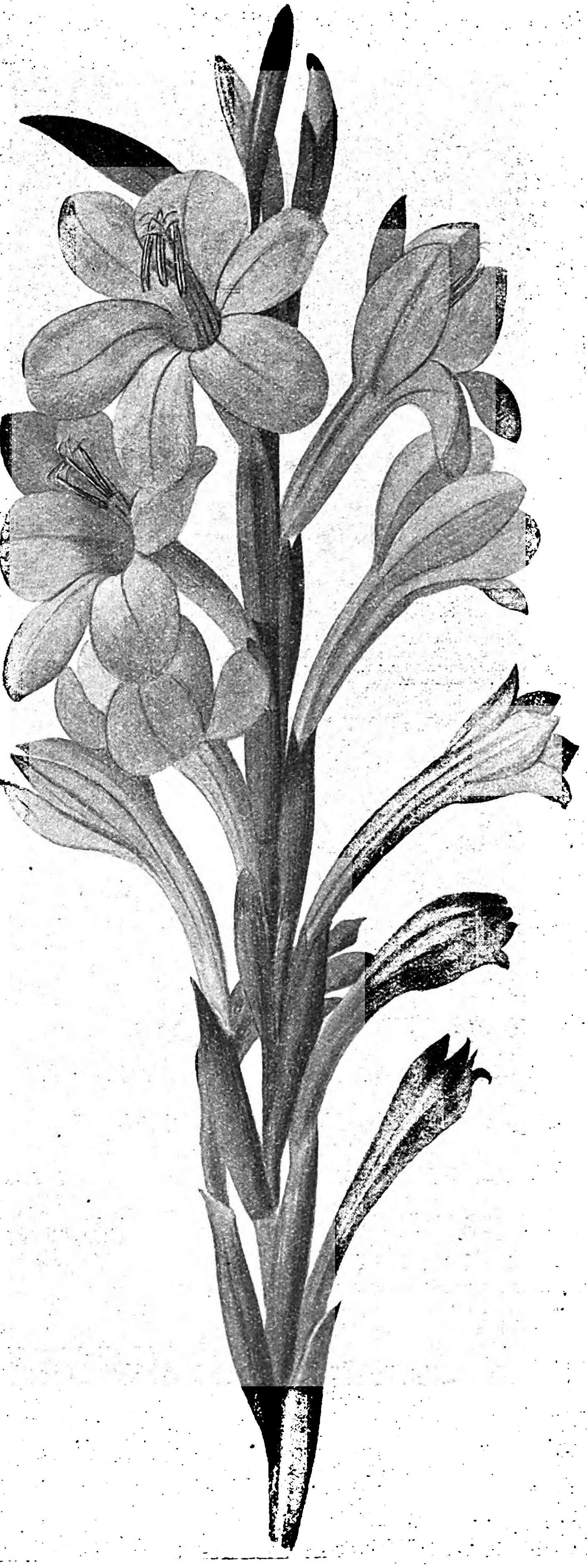

FIG. 149.—WATSONIA BEATRICIS.

From a drawing by Miss L. Snelling, of a plant grown in the Hon. Mrs. A. Ryder's garden, September, 1925.

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* *loc. cit.*

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THE GARDEN POLYANTHUS.

When searching for particulars concerning the origin and history of the Polyanthus, I made the following notes:—

Dorstenius' *Botanicon*, 1540, contains a record of "Primula veris eo decocto si paralytica membra inungantur, ualde prodest"=If this is boiled down and palsied limbs are annointed with it, great benefit will result.

Most of the old herbals (the earliest one printed was in 1470) allude to the Primrose as Herba paralysis.

The greatest and most typical of sixteenth century botanists, Leonhard Fuchs, 1542, described as the third of the fathers of German botany, makes no mention of Primula veris or of the Tulip in his botanical work.

There is no description of a plant exactly like the Polyanthus by Gerard or Parkinson, or in the works of earlier herbalists. Gerard, in his *Herbal*, 1597, does not differentiate the plant from the Primrose; he notes Cowslips, with coloured flowers, Birds-eine and Bears-ears; Primula Auricula with leaves said to resemble Bears' ears, and states they are grown in our London gardens. He alludes to the use of the Primrose as a remedy for paralysis.

Parkinson (*Paradisi*) in 1629, also mentions Birds-eine and Bears-ears, Primula Ursi; some with colour tending to purple, yellow in the middle, the small yellow circle resembling the eye of a bird; and some of red colour with a whitish eye. Thus we have a note of the antho-cyanin pigment in the petal.

In *Hortus Eystettensis*, 1613, Bazil Besler, describing the plants of the famous Botanical Garden at Eichstadt—founded in 1609 by Abbot John Conrad von Gemmingen, and destroyed in 1634 during the Thirty Years' War—describes the Primula veris pratensis as Herba paralysis; Polyanthus—Primula veris hortensis floro gemimo; and Auricula Ursi as Primula veris, Albo, Purpurea Luteo. There are three illustrations.

John Rea, in 1676, writes of Primula veris and paralysis, and Bears-ears—nobler kinds of Cowslips.

Worlidge, 1683, in the *Art of Gardening*, states: "They delight in rich soil and shade, but not drip of trees, winter in sun, summer in shade. Defend them from wet in winter, but they endure all the cold very well. In your election of them, it is better to trust your eye, or confide in an honest gardener, than in the lame descriptions you meet withal."

There is no indication that Salmon, 1711, knew the Polyanthus as a herb, although he describes a wild hybrid Oxlip, and a red Primula from Turkey; he notes Primula veris major—the Cowslip; Primula veris minor—the Primrose; and P. v. pratensis—the Oxlip. He, too, calls the Primrose, Herba paralysis.

In Mortimer's *Husbandry*, 1716, I find Auriculas, Cowslips and Primroses mentioned, but not Polyanthuses.

Bradley, 1719, in *Improvements in Gardening*, states there are two kinds of Polyanthus, the Primrose kind and the Cowslip kind; he writes of a Polyanthus called Feathers, with blossoms split. He described the perfection of the Auricula in terms even George Glenny might not have found amiss. He wrote: "Auriculas increase so fast, wise men decrease so fast; in a short time this tribe of plants will want men of note to take their names from." He mentions "The Pride of the Garden," of which one root sold for twenty guineas. There is evidence of a Polyanthus "boom" in 1728.

In *The Flower Garden*, of Furber, 1734, the Polyanthus is depicted as of scarlet colour, with a yellow eye and yellow edge, called "Goldfinch." Of Auriculas, some called "Painted Ladies" and one "Royal Widow" sold for ten guineas. He observes the plants may come with thrum eyes one year and pin eyes the next year—I wonder!

J. W. Weinmann, 1737-45, in *Phytanthoza Iconographia*, gives drawings of Auricula Ursi, green edges, perfectly round eyes, red body colour, some dense in shade but mostly striped; and one green, but of starry shape. The Polyanthus he describes as Primula veris—a Primrose clearly.

P. Millers' *Dictionary*, 1752, gives long instructions for care and growth and method of seed-raising: "Sow in December, lightly cover, place in morning sun until 10 o'clock, by no means expose to the heat of the day—one day's sun will kill the young plant.

Eden, 1757, considers the Polyanthus as universally known as any that can be brought into a garden.

The profound and philosophical clergyman, Harvey, 1757, meditates on the Polyanthus with its sparkling beauties, and turns to the Auricula—"with an eye of chrystal and garments of the most glossy satin exhaling perfume and powdered with silver."

In 1761, Polyanthuses were a guinea a root.

Mawes' *Gardeners' Kalendar*, 1767, recommends the sowing of a portion of the seeds in August, but the main part in February.

J. Maddock, in the *Florists' Directory*, 1792, accurately describes the Polyanthus and gives a plate of a perfect pip with a description of the properties of a fine Polyanthus, full instructions for its culture and propagation, and many sage hints as to its care and treatment.

In 1815, Emmerton wrote a treatise on the Auricula. *Flora Historica*, Phillips, 1824, considers "The Polyanthus may justly dispute the prize of beauty with any European flower." He writes of wild Primrose plants in Dr. Buxton's garden at Greenwich; some produced flowers with a scape—not an infrequent occurrence, by the way. He also notes that a change of colour from sulphur to red tint was frequent and describes the "Polyanthus of unnumbered dyes."

The Polyanthus is of mixed descent, of garden origin, and essentially a British flower, partaking more of the nature of the Primrose than of the Cowslip. Professor Hislop Harrison considers the Primrose strain is more potent than the Cowslip strain. Although Parkinson classes the Auricula as a Cowslip, called Primula veris elatior, or taller Primrose, to distinguish it from Primula veris humilis or dwarf Primrose—another old name is Mountain Cowslip—Linnaeus joins the Auricula to the Primula veris (Primrose), and gives long instructions for its care and growth. Most of the authorities classify the Polyanthus as a Primrose, which seems most reasonable, and they call the Oxlip, Primula elatior. *C. W. Needham, Hale.*

CHILE AND THE ANDES.

No. X.

We had a busy week in Santiago. We called upon Professor Fuentes, who was both courteous and helpful, giving us much time and information and putting the Museum Herbarium and Library at our disposal. We called upon Senor Maldenado, of the Ministry of Agriculture, who gave us copies of his work upon the trees of Chile, and conversed with us in English, and we with him in Spanish and French, only twenty-five per cent. of which was, I am sure, intelligible to any of us, although all was very cordial and friendly. We discovered a second-hand book shop where was a copy of Gay's wonderful *History of Chile*. It filled several yards of shelf, and the price was £25, and cheap at that, but we did not buy it; too bulky to cart about, and besides, there it always was when we specially wanted to look up botanical finds, and the owner of the shop did not seem to mind how often we came!

We tried to buy revolvers and to purchase the "world's biggest tortoise." We made no botanical discoveries worth mentioning in Santiago, but in the way of fauna, we became acquainted with the abomination that leapeth by day, and worse still, with the horror that troubleth the night watches. With regard to the revolvers, we were somewhat worried. An English friend who had lived in Chile for a good many years gave us a grave warning—told us we really must not go pottering and poking about in the hills and mountains and country places armed with nothing but trowels. He told us shocking cases of foreigners who had strolled into the country, and been found later at some lonely spot, ripped to ribbons all for the sake of a few pesos in their pockets. Advice from other quarters was conflicting, but the result was that we decided that perhaps we had better be on the safe side, especially after seeing a rather nasty street scuffle. We went, therefore, to choose the revolvers at an ironmongers. Mine was a workmanlike brute like a T-square; but on stating we would have them, we were asked for our permits to carry arms, which we had not, and without which we could not buy. We called at the War Office to obtain permits, but decided that we could not settle down in Santiago for the indefinite period that seemed necessary, and so were saved the cash and great anxiety that the weapons would have cost us The tortoise we met when looking for somewhere to have lunch. A little crowd had collected on the pavement and we thought there must be a dog fight or a street accident. I pushed in to have a look, and there, instead of a dog fight, was the "biggest tortoise in the world." On the wall above him hung a crude poster announcing "Tortoise Soup to-day." I do not pretend to be a testudologist, but I recognised him as one of the almost extinct species from the Galapagos Islands, and far bigger than anything in the London Zoo, so my companion and I decided that at all costs we must save the tortoise from the soup and send him to the Zoo. We lunched at the restaurant—which was excellent—and opened negotiations for the purchase of the tortoise, without much success. The pro-

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* Previous articles on Mr. Clarence Elliott's expedition were published in our issues of November 12 and 26, December 10 and 24 Vol. LXXXII; January 7 and 28, Vol. LXXXIII; July 28, Vol. LXXXIV; March 28 and April 6, Vol. LXXXV.

rietors imagined, I think, that we were setting up an opposition restaurant and wanted him for opposition advertisement. We were leaving Santiago for Coquimbo next day, so we instructed an agent to buy and hold the tortoise for us, naming a very long price as our maximum, and at that we had to leave it, feeling pretty sure of success.

We left for Coquimbo by train on September 17, the eve of Chile's great national fête day of independence, and we arrived in Coquimbo the following afternoon. It was an exceedingly interesting journey to us, although somewhat slow and crude. But it is a journey which folk who live in the country avoid if they can, prefering to go by sea. At one point a high mountain pass has to be crossed, and here the train has been known to come unstuck in the middle, with hateful results for the rear portion. At every tiny wayside station there were flags to celebrate the great September 18. Children came out and sang patriotic songs, and our engine was decked with flags and flowers. At one station I got down and went forward to botanise on the engine. I had identified Centaurea chilensis, a handsome, cream-flowered species, smelling of goat; two forms of Leucocoryne, and Pasithea coerulea, when the train dashed off without warning, and I only just managed to leap on to the guard's van at the rear, where I was marooned for over an hour, missed lunch—but shared the guard's.

Coquimbo is a deadly little town—I hate writing this, for we received much charming hospitality there. It sits on the shore of a rocky promontory which forms one extremity of a lovely bay. The railway runs down the main street, and above this street, at right angles to it, lesser streets run up the rocky hillsides to unbelievably squalid looking slums. At the principal hotel we were given a gaunt room with two pretentious beds, merely to look at which made one go goose-skinned, and a grimy plush sofa on which, instinctively, one did not sit. To be fair and honest, however, our nights here were less disturbed than we expected.

A road runs from Coquimbo around the beautiful bay to Serena on the other side, ten or twelve miles away, and soon after arriving we boarded a motor-bus and set out on this route, in order to get into the country. Four or five miles out we got down and walked inland, and soon got away from cultivated land among the low, rocky hills. At once we began to find interesting plants. In a small plantation of young Eucalypti we came upon a new Leucocoryne, more sensational even than the blue one. A fine deep lilac it was, shading to a lurid blood-red centre. But it was scarce, very scarce. We only found a dozen or so, and did not secure all of these. The bulbs were deep down in very sandy soil and were extremely difficult to get. There was one drawback to this brilliant Leucocoryne, which, by the way, we never found anywhere else, and that was a strong odour of Garlic when the plant was handled. Several other species have the same defect, especially one of the white ones which has extremely fragrant flowers. We found our blue Glory of the Sun near the lilac and red species, but not very plentifully.

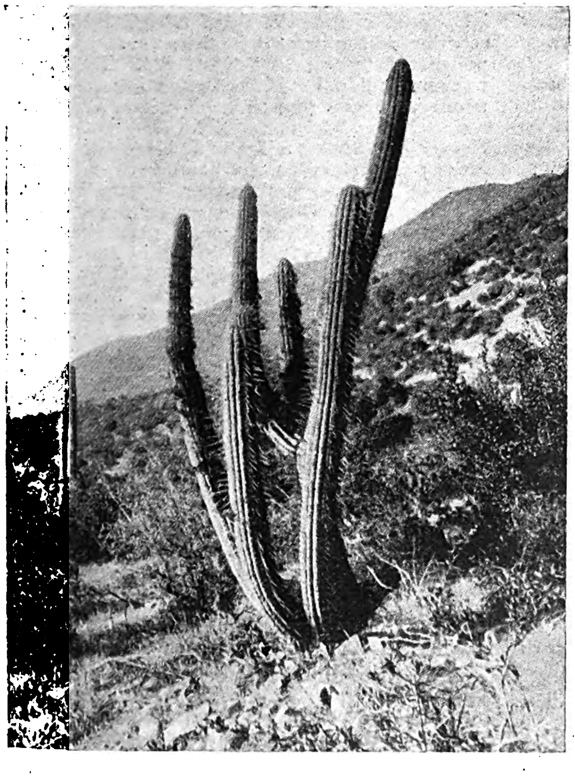

FIG. 150.—CEREUS ON THE HILLSIDE AT COQUIMBO.

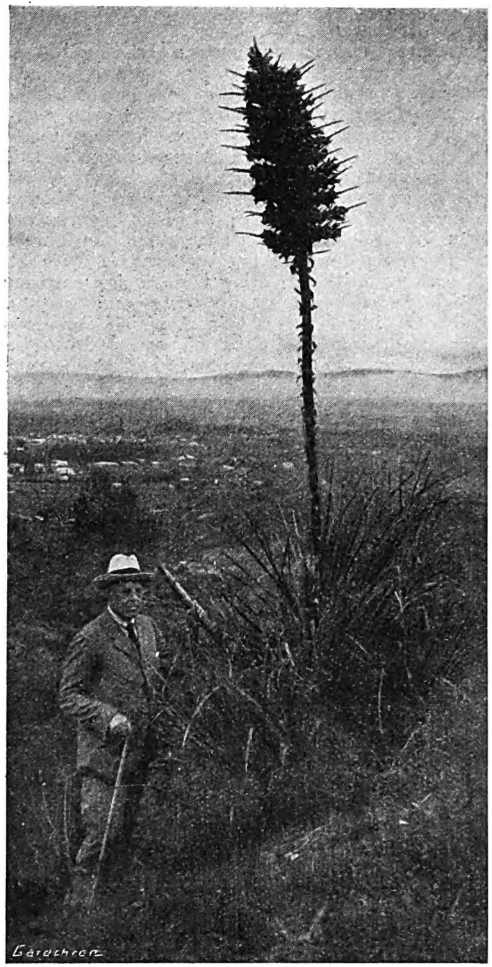

FIG. 151.—PUYA CHILENSIS ON THE HILLSIDE ABOVE VILLA ALLAMAND CHILE.

An interesting plant was Plumbago chilensis, a wiry, sub-shrubby species with dark Oxford-blue flowers. It grew in rocky places, with rather the habit of Ceratostigma Willmottianum, from three to four feet high, and was almost, although not quite, a really good plant. Sometimes one thought it was delightful, and then at other times one would think it was hardly worth collecting, but I did collect and send home seeds, although I have not yet heard of them germinating anywhere. I think the chances of it turning out hardy are remote, and if not hardy, it would be hardly worth while. Even more interesting than the Plumbago was Oxalis gigantea (Fig. 152). This extraordinary Oxalis makes a large, woody bush, often so much as six feet, eight feet, or even ten feet tall. Its erect, slightly branching stems are thickly furnished from top to bottom with short spurs, carrying rather fleshy, green leaves and countless golden blossoms. The trunk is often two or three inches in diameter at the base, and I cut and brought home a stout walking stick of it. Among one of the consignments of specimens sent home to Edinburgh Botanic Gardens, I enclosed a short length of the woody stem of Oxalis gigantea as a curiosity. It took over four months to reach Edinburgh, and there it was pounced upon by Mr. Stewart, who, seeing in it scope for a miracle, set to work to propagate from it! When last I heard from Edinburgh, more than a year after I had collected it, I was told that this piece of Oxalis timber was bursting into leaf!

A very charming plant growing quite plentifully in this rocky country was a shrubby Solanum species (C.E. 11). It formed spreading bushes, with ascending stems four feet to five feet high, which carried panicles of violet flowers in enormous quantity. Both in habit and in flower it is much like S. crispum, although the leaf is pinnate. Finding it in full flower, I hardly hoped to get good seeds, but after long search we found a plant with last year's fruits still hanging. Lt.-Col. Messel (gr. Mr. Comber) showed this Solanum at the R.H.S. meeting of August 28, when it received an Award of Merit, as a tender shrub. That, I think, is how it had better be classed, although I should have little fear for it in the open in mild districts. At Mrs. Carl Holmes' garden at The Node, Welwyn, Mr. Penton recently showed me pot plants of it in a cold frame, whose pots of soil were frozen stiff, yet which were sprouting vigorously from the base. This Solanum has been identified at Kew as S. pinnatum (Cav.). *Clarence Elliott.*

(*To be continued*).

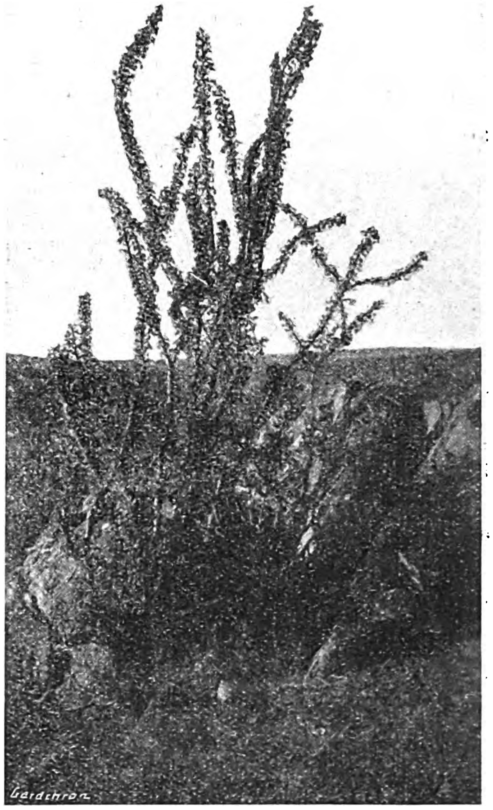

FIG. 152.—OXALIS GIGANTEA AT COQUIMBO.

INVESTIGATIONS ON THE SHAB DISEASE OF LAVENDER.*

Investigations on the shab disease of Lavender have been carried out at the Cambridge University Botany School, and on the grounds of growers of Lavender on a large scale at Worthing and Hitchin.

Field Observations.

Extensive field observations have been continued to determine the point of origin of the disease in the plant. These have now made it quite clear that there are two main methods by which infection can occur (1), through the leaf axils on young developing shoots up to the time when the bark is formed on them; other parts of these shoots are also liable to infection, but infection most commonly occurs in the leaf axils; and (2), through wounds made at the time of cutting the crop, or in various trimming practices carried out with shears.

Field observations have also shown that the fungus which causes the disease grows saprophytically on White Goosefoot (Chenopodium album), which is a very common weed in Lavender fields. The fungus has been isolated and grown in pure culture from this source, and Lavender plants have been inoculated with the cultures thus made. The inoculated Lavender plants became diseased in the same way as those inoculated with the fungus from Lavender. This fungus has not been found growing parasitically on Chenopodium album, nor has it been found growing saprophytically on any other weeds in diseased Lavender fields.

Culture Work.

The fungus which causes the disease has been grown in pure culture, and it has been identified as Phoma lavandulae, Gabotto.

Experiments with hanging-drop cultures have shown that when once the spores have been exuded from the pycnidia they cannot retain their capacity to germinate for more than 114 hours in a dry atmosphere, and begin to lose their viability after sixty-four hours under moist conditions at 15°C. The pyncidia, on the other hand, are highly resistant to a wide range of environmental conditions, and the spores that they contain do not lose their viability for at least a year, and probably much longer.

Inoculation Experiments.

Inoculations of healthy Lavender plants carried out at monthly intervals throughout the year have shown that under suitable conditions infection can take place at any time of year, although least readily in January, and most readily during the spring and autumn. Infections can occur in any month, both in wounded and unwounded plants, but always take place most readily if fresh wounds are present. This is specially so in the winter months. In all cases there is a long lapse of time, usually ranging from two months to as much as a year, between the time of inoculating and the first appearance of disease symptoms, so that a plant may appear to be healthy while the fungus is in a latent condition.

Other experiments have shown that wounds freshly made in August and March are liable to infection only until they are a month old.

Inoculation of different varieties of Lavender have shown that, while most varieties are about equally susceptible to disease, the variety Dwarf French appears to be completely immune. This variety is stated to be of no value in the manufacture of perfume. Lavandula dentata is also immune from the disease.

Inoculations through leaf axils on young stems have shown that infection can occur at these points, but that wounded leaf axils are more liable to infection than unwounded ones.

Control Measures.

Field observations have made it clear that if shab disease becomes established in any field, pycnidia lie about on dead twigs, and on Chenopodium album, and the ground becomes "Lavender sick." Hence, a period of at least one year should be allowed to elapse before replanting any such area with Lavender.

Cuttings should be extremely small and selected only from healthy plants. Minute cuttings in a light soil in a glasshouse have been found to root more readily and to grow more rapidly than larger ones. In one instance many thousands of cuttings which were taken in this manner from a badly diseased stock have so far shown only a small percentage of infection.

A large scale experiment in which bushes were trimmed drastically with shears early in March, resulted in a decrease in the spread of the shab disease by one-half during the ensuing summer as compared with unclipped control plants. Evidence has been obtained which indicates that the result would have been even more satisfactory if the clipped plants had not become infected from the unclipped control rows in their immediate vicinity. Flowering was delayed for a fortnight or three weeks.

Lavender should be afforded clean cultivation, and special care should be taken to eradicate Chenopodium album.

Experiments with manurial treatments have not had time to give conclusive results. *J. R.*

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* Abstract of a paper by Mr. C. R. Metcalfe, read before the British Mycological Society on March 16.

NOTICE OF BOOK.

Nature in Field and Meadow.*

The above is a naturalist's book of light reading, which some would skim through in the course of a journey from London to Brighton by train, although little of the instructions would be remembered. The beginner, at least, would have to take the book to the field and try to discover some of the objects named by the aid of the descriptions and the illustrations, which are line drawings, with the exception of that on the cover and the frontispiece, which are coloured. There are twelve chapters in the book, dealing with the fields and meadows of England, about the soil, trees and shrubs, grasses, lesser and greater flowers, four-footed inhabitants, smaller and larger birds, butterflies, and miscellaneous creatures of field and meadow. The author must have made many excursions from his home in the first garden city to make observations on wild nature.

The first chapter deals with antiquities, including flint implements of the palaeolithic age, and others down to Roman times, so well as fossils from the chalk. In dealing with the soil the author goes a little way into the ecology of the subject, and states that the Buckthorns grows mostly on the chalk, and would wither away and die if planted by man on damp clay soil. A good gardener, however, would see to the drainage and the Buckthorn would be happy even on clay. A description of the tall Black Poplar shows it to be the Italian Black Poplar. Among the grasses, line drawings of the Meadow Fescue and the Wild Oat (Avena fatua) are true to nature. The Tumid Field Brome Grass might be Bromus secalinus, but is not figured, and could scarcely be B. arvensis, which is one of the least tumid.

We would have described the Daisy differently, for the author states that Bellis perennis means "always pretty," whereas Linnaeus merely meant the Perennial Daisy. If he had taken the name Daisy, he would have found that it came from the Saxon *daegesege*, the day's eye, which opens in the morning and closes at night or late in the day. The ray florets are female, while the disc florets are stated to be male, whereas they are hermaphrodite and ripen seeds abundantly.

He has used a notebook for the past thirty years and chronicled each day's observations, including many red-letter days, but the latter were so vividly impressed upon the memory that written record was unnecessary. That is quite true, but much pleasure can be derived by reading the notes of observations made thirty or forty years ago. He himself writes that, forty years ago he was lifted up to look into a chaffinch's nest in a tangled bush, and the sight of it marked the birth-day of his Nature-lore, his initiation into the life of a naturalist. He has much to say about the chaffinch, and many other of the more common and interesting birds, beasts and insects to be seen in the countryside. The twenty-two line drawings will be helpful to the beginner, and a full index gives the names of everything mentioned in the book, while the type is large, and the contents without technicalities and readable. *J. F.*

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* *Nature in Field and Meadow*, by W. Percival Westall, F.L.S., F.S.A.Scot. Illustrated. London: The Sheldon Press, Northumberland Avenue, W.C. 2. Price 2s. 6d.

RAISING DAFFODILS IN NEW ZEALAND.

This is an ambitious subject for a neophyte to tackle, especially by one whose purse does not allow of the purchase of the more recent and expensive varieties, but the attempt may be justified because, although hundreds of growers are raising seedlings, I see very little written about the matter, and I believe the records of failures are almost as valuable as those of successes; moreover, I have stumbled upon one fact which I have not seen mentioned in any breeding experiments. I would like to stimulate others to record their experiences, so that in course of time complete lists might be made of good and shy seed-bearers, of potent pollen parents and also of the absolute mules; such lists as the late Rev. Joseph Jacob gave in *Daffodils*, of the Present Day Gardening Series.

In a not very extensive garden library, I am fortunate in possessing *The Propagation and Improvement of Flowering Plants*, written by that great gardener, F. W. Burbidge, in 1876. He quotes Dean Herbert's experiments, who found *inter alia* that Narcissus Odorus never seemed to set seeds either in cultivaton or in its native habitats, that the pollen of Soleil d'Or and Double Roman Hermiones (Tazetta) invariably failed, but that of States General pollenated almost every Ajar touched with it.

In my own limited experience I have tried for years to induce Narcissus Odorus to seed, but have always failed; nor have I succeeded in getting seeds from States General, nor my four Poetaz varieties, Elvira, Starlight, Jaune à Merveille and Scarlet Gem. But I have three seedlings of Narcissus triandrus var. calathinus pollenated by Jaune à Merveille. The flower was emasculted, but of the twenty-four seedlings, twenty-one were pure calathinus and the other three showed the cross. The best is Jaune à Merveille, with a fairly wide large cup of the same pure yellow as the perianth. It is very slow of increase and rather a late variety, but very good. One flower out of a truss on a seedling yellow Tazetta, seems to have set seeds with pollen of Soleil d'Or this year.

Another cross I attempted was by using pollen of N. triandrus var. albus on N. Jonquilla; seventy seedlings resulted, of which sixty-nine were N. Jonquilla and one a definite cross. This is a beauty. It is multiplying fairly rapidly, is very free-flowering (commenced in its second year), and is of a lovely luminous citron-yellow with the trumpet somewhat large and paler than the perianth, which is a little reflexed.

Last year I crossed about sixty N. Jonquilla flowers with some dozen varieties of pollen, emasculating every flower as it opened. No seeds set, except with Narcissus triandrus var. calathinus, but the seeds were extremely small and none has germinated. I had a somewhat similar experience with Paper White Narcissi; these seed freely with me, especially when two varieties of it are crossed; last year seedlings flowered contemporaneously with an early white Trumpet, which I believe to be Madame de Graaff, although it never seeds with me; I made many reciprocal crosses, invariably removing the stamens except in one or two flowers; no seeds set on either variety except the two or three Paper Whites which were not emasculated.

These experiences have led me to believe that I have, as I stated, stumbled upon a fact of some importance, viz., that to succeed in a wide cross it is necessary to refrain from emasculating the flowers; the foreign pollen used alone does not stimulate seed production, but if applied at the earliest moment to the stigma to which its own pollen has later access, the latter causes normal seed production and an odd grain of the strange pollen may succeed in reaching an ovule which then is enabled to grow, because of the active metabolism by which it is surrounded. This year, at any rate, I am trying similar crosses with both Paper White and Jonquilla, not emasculated, and hope to be able to record some further successes. I may add that, last year, pollen of Jonquilla produced abundant seeds from Lord Roberts and King Alfred, and this year the Paper Whites (unfortunately much too early for the Trumpets) have set about five hundred seeds without hand pollenation.

If there is anything in the foregoing observation it must apply to many other plants as well, and may help to explain Sir Arthur Hort's success with Iris crosses, for he admits he does not remove anthers; it may also help to explain the difficulty of reproducing Lilium Parkmannii and Lilium testaceum by crossing their reputed parents.

To return to Daffodils, Narcissus triandrus var. calathinus and N. t. var. albus are short- and long-styled respectively, and may by analogy be expected to produce an offspring more vigorous than either parent; the former does badly in most parts of my garden, but one clump is doing very well in a border which is shaded after midday and which has been top-dressed with spent Hops; these same Hops seem to suit most Daffodils very well indeed, but they do not suit N. Bulbocodium var. conspicuus, which is almost a weed in this soil and climate. A neighbour of mine, and a raiser of many magnificent seedlings including peach-coloured Trumpets, uses no other manure than the Hops and gets the best results, but perhaps it is the conjunction with our light volcanic soil which causes the success.

All my earliest crosses were made with pollen of N. triandrus varieties; one considerable success resulted from crossing N. Tazetta with pollen of Snowdrop; the resulting seedlings are wonderfully vigorous, with grand, large heads of very large, well-coloured flowers almost comparable with Poetaz varieties but much earlier. The yellows, as in the majority of N. triandrus seedlings, tend to be light and soft. These seedlings bear seeds freely, and I have seedlings from them from pollen of N. cyclamineus, N. Telamonius, and a very early yellow bicolor Trumpet. N. t. var. calathinus pollen on Trumpets, especially Madame Plemp, has produced flowers close to Bennett Poe, one of them bearing twin flowers with long trumpets, the trumpet colour being paler yellow with an almost white rim; crossed with Dante, it has also produced twins, as has pollen of Bennett Poe itself, but the perianths are narrow and stellate.

N. triandrus var. albus has also crossed with N. minimus, but the results, although interesting, are rather " squinny "; they combine the minimus trumpet with very narrow, reflexed petals.

My poorest results are with N. poeticus seedlings but so far I have done little with Horace and Cassandra.

N. moschatus I have lost, but I have flowered seedlings of it pollenated by Madame de Graaff and N. triandrus var. albus, and also seedlings of Peter Barr, Glory of Noordwijk, and Libra crossed with its pollen. I hope to try crosses between these seedlings to reproduce, if possible, N. moschatus by Mendelian segregation.

N. cyclamineus is doing very well with me and not in the wet conditions advocated by Mr. Peter Barr, although I will certainly try it for them. It has produced seeds with Tazettas and Trumpets, but they are too young yet for me to know their behaviour; the former, especially, are growing vigorously, producing second and third leaves, and I am hopeful they will flower in their second or third year.

I will conclude with one last observation. Firebrand pollen on an Incomparabilis produced normal-sized seeds, which have germinated fairly well, but with Lord Roberts it produced very small seeds, so much so that I thought only five or six were good and labelled the pot with five seeds only, but nine seedlings have appeared! If the resulting flowers exceed expectation as much as their germination has done, I shall count myself very fortunate. *W. M. Thomson, Taranaki, N.Z.*

BULB GARDEN.

TULIPA GREIGII.

This Tulip species is one of the best for the rock garden for those who delight in a sheer blaze of colour. While rather too tall in habit for the small rock garden, it is superb on a sunny ledge in a more imposing structure, its glowing scarlet cups being a most striking sight. Tulipa Greigii (Fig. 153) is also remarkable for its handsome, grey-green leaves which are curiously blotched with brownish-purple markings, and which make a pleasing picture for several weeks before the flowers appear on their twelve-inch stems.

Tulipa Greigii is, perhaps, more insistent than other species on having a thorough baking and drying-off after flowering if the bulbs are to store up enough energy for another display in the following year, so that it is perhaps as well to make sure that wet is not allowed to reach them from after the flowering period until the early spring. This may be effected either by lifting the bulbs when the foliage has died down, and storing them in a cool place until planting time in October or November, or, by covering the bulbs *in situ* with a pane of glass.

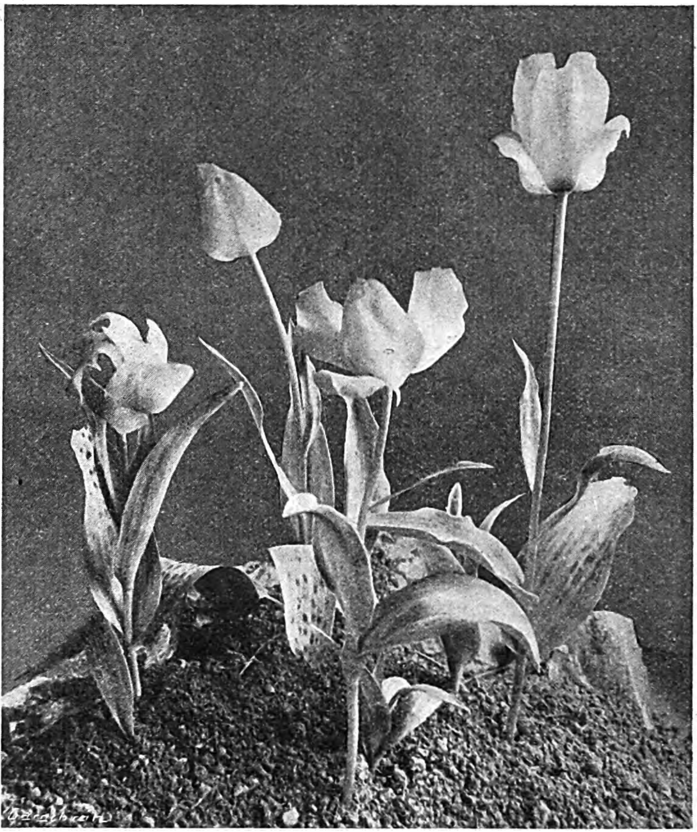


FIG. 153.—TULIPA GREIGII.

Tulipa Greigii may also be grown in pans in the alpine house, where the blossoms may shine undamaged by wind or rain, and where the bulbs may be ripened more easily for another year. In any case, Tulipa Greigii may be replaced each year by imported bulbs if it is found that it will not withstand our summer, and really, the effect in spring makes such an expense well worth while. *Reginald Kaye, The Birch, Sharpthorne, Sussex.*

GALANTHUS NIVALIS VAR. VIRIDAPICE.

One finds that some growers have formed an impression that the form of Galanthus nivalis known as viridapice is identical with G. n. var. virescens, but this is not so. G. n. var. viridapice has not the green inner segments of var. virescens, and the green flushing at the apex of the outer segments of G. n. var. viridapice is fainter and smaller than that on those of var. virescens. I do not know the origin of G. n. var. viridapice, and it was apparently unknown at the time of the Snowdrop Conference of the R.H.S. in 1891, as it is not mentioned in any of the exhaustive papers read then. It would be interesting to know its origin; but it is a much less distinct plant than var. virescens, and I can hardly think that it is a seedling of that form of G. nivalis. *S. Arnott.*

WOODLAND GARDEN.

UVULARIAS.

These herbaceous perennials, mostly natives of North America, are usually among the first to show the fresh green of spring. They are not, as a whole, a particularly ornamental tribe but some of them have their uses, and all posses, a certain elegance of growth which will appeal to those who appreciate foliage plants. For the woodland, for growing between shrubs, or furnishing waste corners and waterside banks, the Uvularias will not be found wanting. They enjoy shady situations and a cool, good soil. With such conditions they will spread into little colonies very much after the manner of Solomon's Seal. Although they do not grow much taller than a foot, they suggest the last-named plant in their pairs of glossy, oval-pointed leaves, the arching grace of their slender stems, and pendulous, bell-shaped flowers.

The best of the genus known to me is U. grandiflora, which bears creamy-yellow blossoms in May. The more leafy, U. perfoliata might be given second place, and there are one or two more, including one from China. All that I have grown are shallow rooters, and as they have no little zest for colonising, they should be given such places as those suggested, rather than the companionship of choicer plants.

The genus Uvularia, of the Natural Order Liliaceae, is closely allied to that of Disporum, and several species at one time known as Uvularia, have now been referred to Disporum. *J.*

FLOWER GARDEN.

NICOTIANAS.

The Tobacco plants form a group of half-hardy annuals of a highly ornamental character, and they are useful for various purposes in the garden. Of a tender nature, it is not safe to plant them out until the end of May or the beginning of June, but they are very quick-growing and not infrequently suffer from being sown too early. The best practice is to sow the seeds in heat about the middle of April, prick the seedlings into boxes so soon as they may be handled, and plant them out from these boxes when conditions allow; such plants will make far better material than earlier-sown ones which have been starved.

The larger-growing species are excellent subjects for sub-tropical beds and groups, their handsome foliage giving them an imposing appearance. The most striking are N. Tabacum, with short racemes of rose-coloured flowers, and N. sylvestris, a highly effective plant of robust stature with long, tubular, pure white, fragrant blooms. N. affinis is a very popular plant because of its delicious fragrance, particularly in early morning and evening; it should be grown in small groups near the dwelling-house windows and by frequented paths. It is also an excellent subject as a pot plant for furnishing the conservatory.

N. Sanderae and its hybrids form a group of highly decorative plants of elegant, branching habit, bearing beautiful flowers on light, graceful stems, and covering a wide range of colours. They are valuable as border plants or for massing in beds, and remain decorative from early July until well into the autumn. *W. A.*

SODIUM CHLORATE AS A WEED-KILLER.

In the issue of *The Gardeners' Chronicle* for February 23, p. 151, it is stated that no reference to the use of sodium chlorate as a weed-killer can be found.

This chemical has been tried out by several State agricultural departments here in America and is highly recommended. Tests conducted recently at Cornell, New York, have proved sodium chlorate to be deadly to Thistles, and in Kansas it was equally successful against Bindweed. At Purdue, Ind., where, I think, it was first tried, experiments were made about 1914 with various chemicals for the purpose of combating weeds possessing deep roots, such as the Thistle, Bindweed and Quack Grass Couch). The substance sought was not for the destruction of weeds on paths, etc., but on agricultural land that had become over-run with the above weeds. No success was attained until sodium chlorate was tried. The first tests killed ninety-five per cent. of the Quack Grass. [See *Gard. Chron.*, March 9, p. 174.—Eds.].

Sodium chlorate is readily dissolved in water at the rate of 1 lb. to a gallon, and it is either sprinkled or sprayed on, the tops of the weeds being thoroughly saturated. The best time to do this work is when the plants start to bloom.

Sodium chlorate is made only by one concern in this country, at Niagara Falls, the cost being about 30s. per 112 lb. drum. One drum is sufficient to spray an acre. The chemical is not poisonous to livestock, and it does not harm the soil. The action of this sodium on plant growth is to oxidise the tissues. There is one danger only in its use; if mixed with small particles of organic matter it becomes combustible, therefore it should not be handled indoors, and all clothing and shoes worn while applying the spray should be washed before they are allowed to dry, as even friction may cause fire.

Sodium arsenite is also used for a similar purpose, but this is deadly poison, and, if used heavily, it will prevent all forms of plant life growing for months, or even years. It is not so penetrating, however, on deep rooting weeds as sodium chlorate, but is to be recommended for walks, hard tennis courts, etc., because of its sterilising character on the soil. *T. A. Weston, New Jersey, U.S.A.*

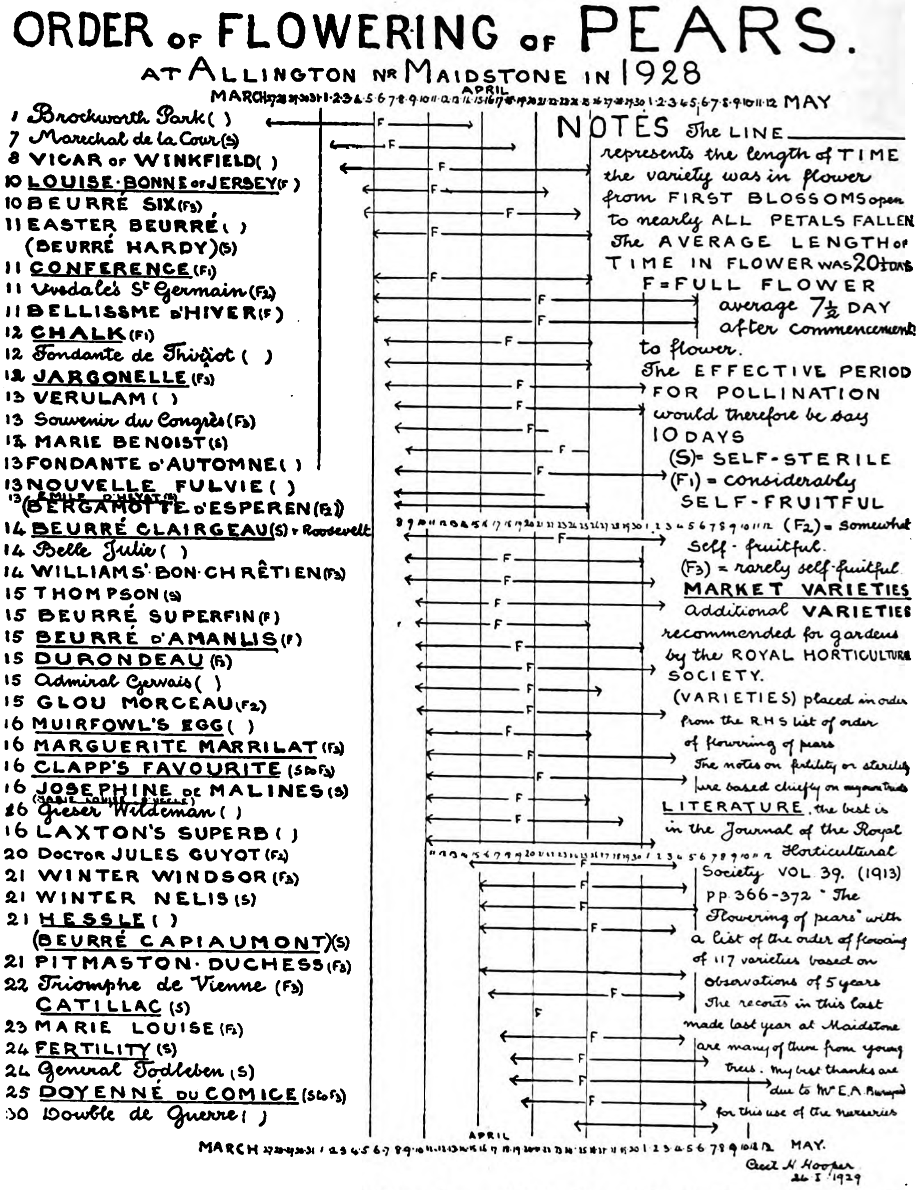
ORDER OF FLOWERING AND POLLENATION OF FRUIT BLOSSOMS.*

(Continued from p. 282).

Pears.

Pears are of special interest in the history of research in fruit pollenation, as it was in 1890 that M. B. Waite was asked by the Department of Agriculture of the U.S.A. to investigate the cause of unfruitfulness of an orchard of 22,000 Williams's Bon Chrétien trees which, although planted fifteen years and healthy, hardly yielded any fruit. In this orchard it happened that three trees of different varieties had been planted by mistake among the Williams' (two Clapp's Favourite and one Buffam). In the neighbourhood of these three trees the Williams' were very productive, bearing down the branches to the ground with the weight of the fruit. His previous experiments led Mr. Waite to believe that this limited and local abundance was caused by cross-fertilisation from the other trees, and this view was fully confirmed by all his subsequent experiments. I had an example of the importance of pollenation in Pears, although on a small scale, when fruit-farming at Swanley, Kent; I planted forty-eight Pitmaston Duchess pyramid trees in an Apple orchard on flat, rather low land; although for four years they flowered well, they did not mature a single fruit. I therefore had them taken up and replanted them on a hill-side about a quarter-of-a-mile away in a plantation of Pears of different sorts and placed a hive of bees among them; the trees then bore well.

In my own experiments I have found the following varieties more or less self-fruitful:—Conference, Dr. Jules Guyot, Chalk, Beurré d'Amanlis, Swan's Egg, Colmar d'Eté, Duchesse d'Angoulème, Marguerite Marillat, Winter Windsor, Jargonelle, Souvenir du Congrès, Beurré Diel, Durondeau, Petite Marguerite, Blickling and Glou Morceau. Only one fruit from each has matured with me out of many trials with Pitmaston, Williams' Bon Chrêtien and Doyenné du Comice. No fruit matured in my trials with own pollen from Clapp's Favourite, Fertility, Emile d'Heyst or Catillac.



At the Royal Horticultural Society's Gardens at Wisley, Mr. F. J. Chittenden and Mr. A. N. Rawes have experimented to a considerable extent on the pollenation of Pears, as well as of Apples and Plums; in a recent letter, Mr. Chittenden gave me the names of fifty-two varieties that had been found to be self-fertile to a greater or lesser extent under glass, and of forty-four that had not, so far, matured fruit with pollen of the same variety.

In Pears, some of the best varieties are shy bearers. Last year I tried twenty-six different kinds of pollen with Doyenné du Comice, but only from six of these did fruit mature; these were from the pollen of Hessle, Triomphe de Vienne, Fertility, Grégoire Bordillon and Madame Lye Baltet; but another year many of the other varieties which failed might mature good fruit.

Careful observations in successful and unsuccessful Pear plantations might yield many facts and suggestions which might be checked by pollination trials.

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* A paper read before the Royal Society of Arts, Wednesday, February 13, by Mr. Cecil H. Hooper, F.L.S., of Wye, Kent.; Mr. H. V. Taylor, O.B.E., Commissioner for Horticulture, Ministry of Agriculture, presided.

Among successful pollenation results were :—Clapp's Favourite with Conference; Dr. Jules Guyot with Clapp's Favourite, or Roosevelt; Fertility with Conference; Durondeau with Fertility; General Todleben with Conference; Vicar of Winkfield with Winter Cresanne; Williams's Bon Chrétien with Clapp's Favourite, Winter Cresanne or Fertility; Pitmaston with Conference or Williams's Bon Chrétien; Uvedale's St. Germain with Marie Louise; Catillac with Fertility or Uvedale's St. Germain.

Apples.

Although a considerable proportion of Apples are gradually being shown to be more or less self-fruitful (under glass varying from seven per cent. down to 0·2 per cent.), yet all experimenters agree that no single variety can be advantageously planted alone and that all varieties yield more if interplanted with one or more varieties in flower at the same time. Even the most self-fruitful variety will yield three or four times the crop in association with other varieties, than if planted alone.

In 1910, I placed three paper bags over unopened blossoms on trees of sixty-three different varieties of Apple, with the following results :—1, with insects excluded only Irish Peach matured fruit; 2, flowers pollenated with own pollen, eleven varieties matured fruit; and 3, flowers pollenated with a different pollen, forty-eight varieties matured fruit. These were single trials in each case, but my experience since is that this gives a fairly correct idea of Apple pollenation in the open air. Among the varieties found most self-fruitful are :—Stirling Castle, Rev. W. Wilks, Golden Spire, Irish Peach, Christmas Pearmain, Baumann's Red Winter Reinette, Ben's Red, Miller's Seedling, Lord Derby, White Transparent and Tower of Glamis, but after many trials I have never persuaded Cox's Orange Pippin or Lane's Prince Albert to mature fruit with their own pollen.

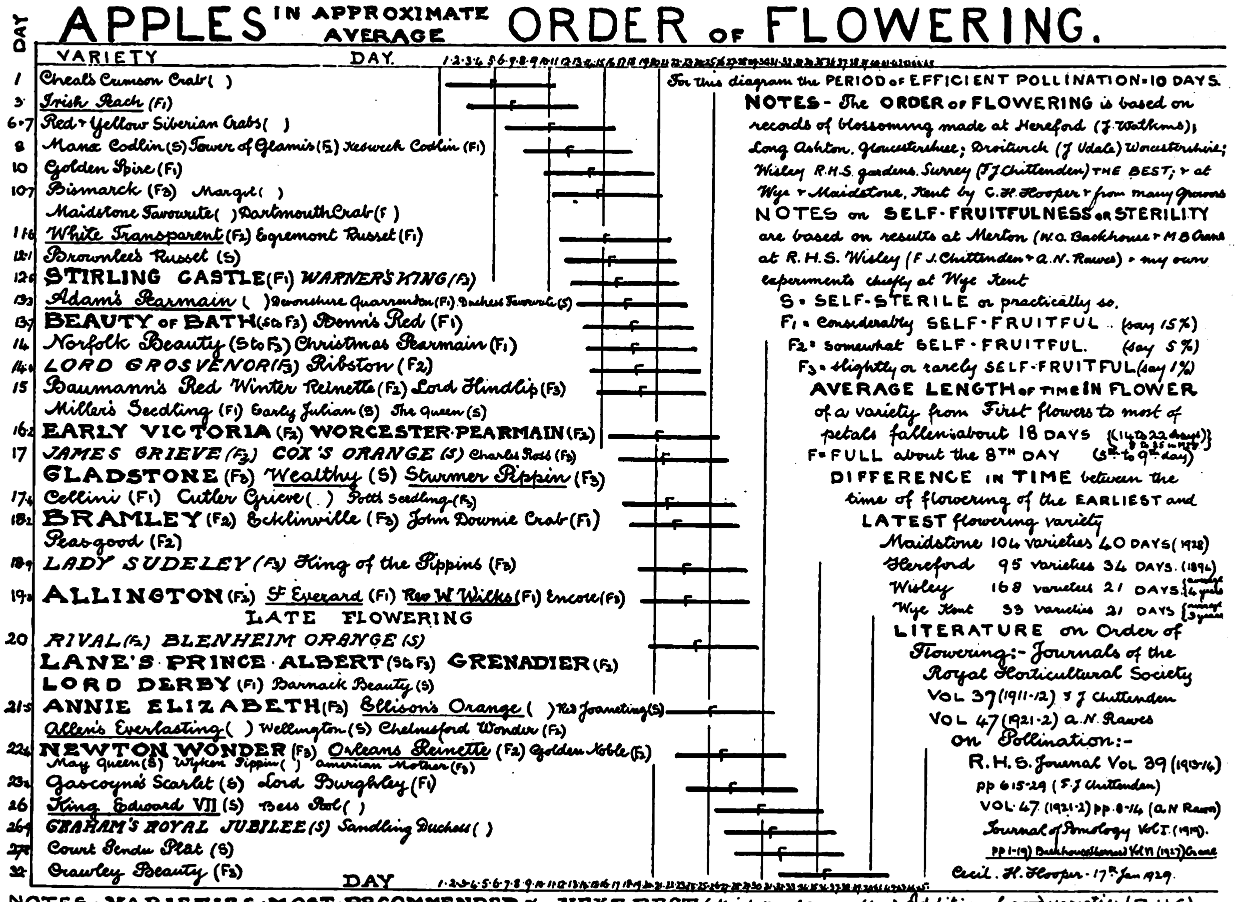
Where a variety has been planted alone in a block, it is recommended to re-graft or replace one tree in eight with a different variety flowering about the same time; Bramley's Seedling is found to be a specially good variety with which to re-graft. Each third tree in each row of a different variety is considered the minimum proportion for a pollenising variety.

In planting a new orchard it is advisable to plant not more than two or three rows of one variety and then alternate with another variety (see table below for times of flowering).

Experience and experiment show the following to be good varieties to plant together, although other combinations may succeed equally well :—Cox's Orange Pippin with Worcester Pearmain; Bramley's Seedling with Lane's Prince Albert; Newton Wonder with Lord Derby; Blenheim Pippin with Newton Wonder; Early Victoria with Grenadier; Beauty of Bath with Allington Pippin; James Grieve and Cox's Orange Pippin; and Gladstone with Cox's Orange Pippin or Worcester Pearmain. In many trials I have found Cox's Orange Pippin to be a good polleniser, the crosses have almost always taken and matured fruit. R. Florin, in Sweden, found the pollen germination of Cox's Orange Pippin to be ninety-eight per cent.

(*To be continued*).

APPLES IN APPROXIMATE AVERAGE ORDER OF FLOWERING.



NOTES - VARIETIES MOST RECOMMENDED, the *NEXT BEST* (Ministry of agriculture) Additional good varieties (R.H.S)

HOME CORRESPONDENCE.

Oil Fuel for Boilers.—The article on "Stoking" by Mr. A. S. Turner, on p. 188, is appropriate, and very much to the point, after such a spell of arctic weather as we have had recently. Stoking in gardens is very often left to boys, or an odd man, with the result that when heat is most needed on a frosty night the fire is low, then, when the sun is shining during the day there is generally a brilliant fire! On taking charge here, I was told the boilers were not doing their work, and on examination, I found the flues choked with soot, and all the air spaces between the fire bars full of clinkers. The method of getting rid of ashes and clinkers had been to throw them back in a heap behind the boilers instead of clearing them out of the stokehole, and during wet weather when water percolated through the walls one can imagine what condition the boilers would be in surrounded by a heap of wet ashes. We have now had Ray oil burners installed, which burn crude oil, and I can recommend them as far more efficient than the old method of stoking with either coal or coke. Once started, the heat rises to whatever temperature the aerostat is set at, when the burner automatically stops, but when the temperature falls about 5°, the heat starts again, and so the temperature in the house remains fairly constant. The burners are run by electricity, off the main, and the current also lights a gas jet, which in turn lights the oil; when the oil is well alight the gas is automatically cut off. There is a flow and return pipe from the burner to the oil tank, and when the burner stops the oil returns to the tank. We have also a circulating pump attached to the pipes which is a great improvement, and a sump in the floor for soakage water, which is automatically pumped out so soon as the hole is full. All pumps and burners are run by current from the main, and if it is necessary to stop one, all that is needed is to pull down a switch. I do not know yet whether this method is more economical than coal or coke, but it is no trouble, and there is no dirt. The stokeholes are all whitewashed, water pipes painted with aluminium paint, gas and oil pipes red, electricity black, and the floors washed out, which is something quite different to the old method of dust and dirt. I shall be pleased to give any of your readers further particulars if they desire it. *Grigor Roy, The Gardens, Bevendean, Oxshott.*

Frost Injury to Fruit Trees.—With reference to the article under the above heading in your issue of March 16 (p. 209), I may state that while I see no injury from the severe frosts of this winter, last winter's frost did damage to a considerable extent. The only variety of Apple affected was Lord Derby, and the damage done was to the young wood. Current growth was killed and second- and even third-year wood died back. The same may be stated of many spurs. After the pruning was completed, the trees presented a sorry sight, and the heads of the trees were reduced by about one-half. Every Lord Derby on my place was affected, and on a neighbouring farm even more extensive damage was done. These trees developed canker and look complete wrecks, although they are young and were a fine, promising lot. The owner now considers them injured beyond hope, and intends heading them back and regrafting. During the same winter all the Conference Pear grafts I had put in during that year were killed. This winter has not damaged Lord Derby Apple, nor has it injured Conference Pear grafts. This fact appears remarkable, as we had lower temperatures this year, over a longer period, but it is the case that less damage is evident in the garden generally this year. Ivy, Privet and rambler Roses are a few plants which show no signs of injury, but which suffered terribly last year. *E. Brown, Hillside, Doddington, Sittingbourne, Kent.*

Arenaria norvegica. — In *The Gardeners' Chronicle* of April 7, 1928, the writer of an article on this plant referred to it having been reported from North Ronaldshay, in the Orkneys, by Sir R. Murchison and Mr. Reach (perhaps Mr. Peach, the geologist, was meant). Can he confirm that record, which is not usually credited? I may add that it does occur in several localities in west Sutherland. Confirming the occurrence of Geranium lancastriense on the mainland, may I state that about five years ago, Mr. R. H. Williamson and I found several plants of it near Seascale. *Claridge Druce.*

MARKET FRUIT GARDEN.

In the first three months of this year the rainfall at my place (2·20 inches) was less than one-third of the average. March contributed very little towards it, for rain fell on only two days during the month, and then the total amount was only ·06. Up to a point, this extraordinary drought has been helpful. The prolonged period of frost finished with that rarity, a dry thaw. As a result of this, the land was left in wonderful condition for cultivation. It might almost be stated that the first cultivation had been done for us. Once through the plantations with either a horse-drawn or motor cultivator produced a tilth such as we often have to work for weeks to obtain. Hand-hoeing in the rows of bush fruits, which is generally very hard work the first time over, was mere child's-play. The whole area was finished without the slightest interruption from rain, and there has been no need to touch the ground since. Instead of the struggle to get through essential work, which is usual at this season, it has actually been necessary to find such make-shift work as ditching to occupy some of the men. Now, however, the drought has gone on too long. Fruit trees and bushes have at last awakened to active growth, and they want moisture. So far they have not been harmed, but they are coming to the time when they make a big demand on the moisture in the soil, and they are bound to suffer if they cannot find enough.

DRY GRASS ORCHARDS.

Most of all, I want rain for my grassed orchards. I am particularly anxious to get more vigour into many of the trees, and applied chemical fertilisers in generous amounts in good time, in the hope that they would get washed into the ground and ready for use at flowering time. Instead of this, they lay for weeks dust dry on the surface. The rough grass, scorched by tar distillate wash and by the artificials, and further affected by the frost and drought, has been entirely brown, and even now, when a few green blades are pushing through, brown is still the prevailing colour. It would have been easy to burn the grass off; and I should have done this if the manures had not been lying on the surface. Two wide strips across one plantation did get burnt by accident, and much activity was needed to check the fire. The effect was very pleasing, particularly after the harrows had been run over the surface. On this burnt area the young grass is springing up thickly. I should say that burning off is quite a sound practice; and I should not hesitate to do it another time, provided that it did not involve the burning of an expensive dressing of artificials, with the possibility of loss of valuable ingredients.

There is a mulch of dry grass in some of my orchards, and I am trying various ways of inducing it to rot. The dry weather has been all against this. Even last year's fallen leaves are still whole. It is curious that in some of the orchards the grass mulch, the result of annual mowing, disappears rapidly, while in others it accumulates. In the former case the trees do well; in the latter they lack vigour. Evidently some means must be found of getting rid of the mulch, which seems to prevent manures from acting on the trees; and I believe I am near a solution of the problem. In the absence of rain, however, nothing can be done.

PREPARATIONS FOR SPRAYING.

Apples are approaching the stage at which spraying against scab must begin—when the buds are showing pink, but before the petals actually open. As all the trees have been sprayed with tar distillate, I do not have to worry about aphides and Apple suckers; so the field is clear for that most important business, the control of scab. On this, more than on anything else, depends the value of a crop of Apples. Fortunately, I am in no doubt as to what method to adopt, having had an excellent control of the disease in the past two years. If the weather allows one to spray at the right times, there is not much difficulty in getting a good proportion of clean fruits. At the pink bud stage, home-made Bordeaux mixture is used. Many growers employ lime-sulphur at this stage with success; but, after comparing the two washes on several occasions, I am satisfied that Bordeaux mixture is decidedly the better in my conditions. This year the making of this wash will be simplified by the use of hydrate of lime in place of quicklime, thus obviating the troublesome business of slaking the lime. The hydrate is bought in paper-lined bags, in which it keeps for a considerable time. The lime has simply to be thinned down with water; but it is necessary to use 1½ lb. in place of each 1 lb. of quicklime. My formula is 6 lb. of copper sulphate and 12 lb. of hydrate of lime to one hundred gallons of water; but the lime will be increased to 30 lb. for Cox's Orange Pippin and Beauty of Bath, which are very tender. After flowering, most varieties are sprayed twice, once just as the last of the petals are falling, and again about three weeks later. Bordeaux mixture is still the better fungicide, as numerous experiments have shown; but, unfortunately, one has to consider very carefully the risk of spray injury, which is much greater after blossoming than it is before. Bordeaux mixture, even the excess of lime formula, is, in my opinion, far too dangerous to apply at this time, if only because it russets the fruits seriously. I use lime-sulphur at very mild strength, one part in eighty for most varieties, one part in one hundred for Cox's Orange Pippin and Beauty of Bath. Lane's Prince Albert, which scabs very little with me, is not sprayed at all after flowering, as it is very sensitive to sulphur washes. Stirling Castle is the same, but I do not grow this. Arsenate of lead is added to the lime-sulphur for the first after-blossoming application, partly to kill any caterpillars that have survived the winter spraying, and partly to increase the fungicidal value of the very mild lime-sulphur. I cannot guarantee that even this programme is absolutely safe, unless one can always apply the lime-sulphur in cloudy weather or in the evening, which is impossible on a large scale. Apparently one must risk doing a little harm in order to do a lot of good.

BLOSSOM PROSPECTS.

While it is much too early to write anything about fruit prospects, it is evident that there will be no lack of bloom on Apples of nearly all varieties. Plums, I fancy, will be more moderate, although the buds are not so easily seen at present in this case. Pears are patchy, but Cob-Nuts bloomed very freely. Black Currants, which made splendid growth last year, look very promising. Everything now depends on the weather at blossoming time. As the blossom will be very late, there should be a good chance of it escaping frost. There was, of course, no March blossoming of Plums. It seems likely that April will be far advanced before they open their petals. *Market Grower.*

SOCIETIES.

LONDON DAFFODIL SHOW.

APRIL 16 AND 17.—The postponed London Daffodil Show, which was held in the old R.H.S. Hall, Westminster, on these dates, compared very favourably with its predecessors in quality, but there were many empty places on the tabling reserved for the competitive classes. As many of these unfilled spaces were in full view from the entrance, the first impression was that of a poor show, which was far from being the case. The many trade groups contained a large number of splendid varieties, and were highly decorative. There were rather fewer novelties than usual at this show, and of these four were selected for Awards of Merit and one for Trial at Wisley.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. G. W. Leak, Mr. G. Monro, Mr. P. D. Williams, Mr. J. D. Pearson, Mr. W. B. Cranfield, Mr. Francis Barchard, Mr. H. G. Hawker, Mr. C. H. Curtis, Mrs. Brodie of Brodie, Mr L. J. Richardson, Miss Ellen Willmott, Mr. C. C. Titchmarsh, Mr. F. H. Chapman, Mr. H. Smith, Mr. F. A. Secrett, Mr. W. Slinger, Mr. George Churcher, Mr. Peter R. Barr, Mr. C. W. Needham, Mr. W. F. M. Copeland, Mr. W. Poupart, Rev. Rollo Meyer, Rev. G. H. Engleheart, Mr. J. S. Arkwright, Mr. Guy L. Wilson, and Mr. A. Simmonds, Secretary.

AWARDS OF MERIT.

Narcissus Beersheba.—This lovely, pale cream-coloured Trumpet Daffodil, which stands alone and supreme in its class, was given this award as a variety suitable for cutting. It received a First Class Certificate on March 23, 1926, when exhibited as a show flower. Shown by G. L. WILSON, Esq., Broughshane, Antrim.

N. May Molony.—A beautiful Leedsii hybrid of clear colouring and refined appearance. It has large, spreading, pale cream perianth segments, and a rather long, powdered cup of rich primrose-yellow, crinkled and slightly reflexed at the margin. The foliage is large and deep green, and the blooms are borne on firm, stout stems. Also shown by G. L. WILSON, Esq

N. Solleret.—A grand Jonquilla hybrid of large size and firm texture. The slightly waved and ribbed perianth segments are rich yellow, while the tubular cup is deep golden in colour. A beautiful Narcissus. Exhibited by W. B. CRANFIELD, Esq., East Lodge, Enfield Chase, Middlesex.

N. Adventure.—This striking Narcissus, which was shown as an Incomparabilis, but approaches very closely to a Trumpet Daffodil, is of huge dimensions, with large, broad, rich yellow perianth segments, and a spreading trumpet of rich golden colouring, waved and curled, and reflexed at the mouth. The grand blooms are held well on long, stout stems, and the foliage is rich, deep green and ample. Shown by HERBERT CHAPMAN, Esq., Rye, Sussex.

The above are the only novelties which received awards, but Narcissus Edgar Thurston was recommended by the Committee for Trial at Wisley. This is a golden Trumpet Daffodil, with very curled perianth segments and a large trumpet, reflexed, deeply cut and curled at the margin. It was exhibited by F. A. SECRETT. Esq.

COMPETITIVE CLASSES.

In the open section, the only exhibit of twelve varieties, selected from at least four divisions, was a particularly good one from Mr. J. L. RICHARDSON, and it deservedly received the first prize. The dominant varieties were Folly, Princess Miriam, Tenedos and Royalist. There were two exhibitors in the class for twelve Trumpet varieties, and here Mr. RICHARDSON was first with another very good exhibit, which included Master Robert and Alchemist, rich yellows; Kantara and Beersheba, whites; and a bicolor seedling. Mr. G. L. WILSON was second, and he had fine vases of His Excellency and King of the North, both rich yellow.

Mr. RICHARDSON was also first with twelve Incomparabilis, and he included in Festive, Morea, Killigrew and Grackle, four varieties which have beautifully coloured coronas. Mr. Wilson was again second. Mr. Richardson was the only exhibitor of nine Barrii varieties, and he staged Morocco, Danger and Firetail, with vividly-coloured coronas. There was no exhibit of twelve Leedsii varieties in this section, but Mr. Richardson and Mr. F. A. Secrett staged collections of twelve Poeticus varieties which must have caused the judges considerable anxiety. The prizes were awarded in the order named, and the former included beautiful blooms of Thetis, Dactyl and Ringdove, while the latter had equally good specimens of Red Rim, Standfast and Kathleen.

The following classes required six varieties of each of the different sections. Mr. G. L. Wilson was first with (a) Giant Leedsii; (b) white Trumpet; (c) bicolor Trumpet; (d) Incomparabilis, with red colouring, and (e) without red colouring. His best varieties were (a) Suda, which has a long and beautifully tinted corona; (b) Kantara, (c) Rosemorran, (d) Copper Bowl and (e) Damson. With a very even collection which included Master Robert and Alchemist, Mr. Richardson was first with yellow Trumpets, and although alone in the classes for both types of Barrii varieties, was awarded the first prizes for very good blooms. Mr. A. J. Bliss, Tavistock, the only exhibitor, was awarded second prize for Triandrus varieties; and Mr. W. F. M. Copeland was first for double sorts.

Three varieties were required for each of the following classes. Mr. W. B. Cranfield, the only exhibitor, was awarded the first prize for Jonquilla hybrids of beautiful colouring; and the Rev. G. Pearce, Wadebridge, Cornwall, was placed first with Tazetta hybrids. In the class for Poeticus varieties there were five exhibits, and the first prize was awarded to Mr. R. F. Calvert; Mr. Richardson was first with double sorts.

The twenty classes for single blooms of the various sections were very popular, although while the best blooms were usually very good indeed, there was more than a sprinkling of mediocre examples. Mr. Richardson won first prizes with Royalist, yellow Trumpet; Beersheba, white Trumpet; Gregalach, bicolor Trumpet; Damson, yellow Incomparabilis; St. Egwin, bicolor Barrii; Tenedos, giant Leedsii; Venetia, cup-shaped; triandrus, and Golden Goblet, Jonquilla hybrid. A yellow seedling with a widely expanded, recurved corona, and shown by Mr. E. A. C. Thurston, Chandlers, Ford, was the best Incomparabilis without red colouring; and a seedling shown by the Rev. G. Pearce was the best variety with red colouring. Folly, shown by Mr. Calvert, was the best bicolor Barrii, and Kilter, shown by Captain H. G. Hawker, was the best Barrii with red colouring. Coverack Gem, shown by Mr. Calvert, was the best bicolor Barrii with red colouring, and the same exhibitor was first with Silver Salver, a small Leedsii. Mr. Cranfield showed, in Harvest Moon, the best trumpet-shaped, large Triandrus hybrids, and Goodwin, staged by Miss A. R. Baring, was the best Cyclamineus hybrid. With a good seedling, the Rev. G. Pearce was first for a Tazetta hybrid. Dactyl, shown by Captain Hawker, was the best Poeticus variety, and Inglescombe, exhibited by Mr. R. Harris, was first in the class for doubles.

The classes for new varieties were very interesting and contained many especially good blooms. Mr. G. L. Wilson was first with twelve varieties raised by himself, and these included New Moon and several particularly good seedlings. Mr. Richardson was second. In the class for six varieties, the Rev. Rollo Meyer (gr. Mr. J. P. Izzard), Watton Rectory, Hertford, won the first prize with a collection which included some very good seedlings, and the Rev. G. Pearce was first with three noteworthy seedlings.

Although the only exhibitor of twelve varieties not in commerce, Mr. Richardson was deservedly awarded the first prize. His splendid exhibit included Mithian, Brighter London, Jungle Fire, Sunny Trace and Red Planet, which have very vividly coloured coronas. Including a vase of Princess Badura, a vivid Barrii, and a rich yellow seedling Trumpet, the Rev. T. Buncombe, Black Torrington, Devon, was first with six varieties. In his first prize exhibit of three varieties, Mr. Calvert included a fine vase of Coverack Gem and Money, a rich yellow Trumpet.

The competition in the two classes for groups of Daffodils was very disappointing, and in neither the open nor the amateur class did the first prize appear to have been awarded.

Although there were not many competitors, the exhibits reached a high standard of excellence and well illustrated the quality of the best market produce, as well as the skill exercised in bunching and packing. Mr. F. A. Secrett won first prizes with nine superb bunches of yellow Trumpet varieties, and with a similar number of equally admirable Poeticus varieties, and an ideal box of Red Rim. Mr. H. W. White was first with boxes of Tresserve, and of Bath's Flame of equally high merit.

Groups.

The arrangement of the large trade groups at this show could have been improved greatly, for, with the exception of those lining the walls, they were bundled together at one end of the hall, leaving the other end comparatively bare.

Situated on the right-hand side of the entrance was a grand display of Poeticus Narcissi by Mr. F. A. Secrett, of light and charming arrangement, and consisting of blooms of excellent quality. There were huge sheaves of Red Rim, a beautiful sort with reflexed and waved, pure white perianth segments of good substance, and a bright, richly coloured crown—this variety occupied pride of place; other sorts displayed extensively being Narrabri, Charity, of charming form and good substance; Winnie Weedon, and Wide Wing. At the front of this exhibit were charming bowls of Much-Afraid, Papyrus, Kathleen and Peace.

On the other side of the entrance was a grand bank of choice blooms set up by Messrs. Barr and Sons. Trumpet and Incomparabilis sorts were most prominent, of the former, noteworthy sorts being Polemon, King Alfred, Tresserve, Glory of Sassenheim, and St. Hilda. There were several good seedling Daffodils exhibited in this group, while among Incomparabilis and other varieties which made special appeal were Hera, Sweet Rosalind, Sunrise, Snowbird, Fortune's Queen, Mitylene and Abelard.

A really grand display of blooms, of perfect quality, was staged by Mr. R. F. Calvert. At intervals along the group were sheaves of such sorts as Firetail, Dragoon, the double-flowered Cheerfulness, Croesus, the giant J. K. Ramsbottom, and Ideal; while dotted throughout the display were such beautiful sorts as Lucinius; the large, golden, Trumpet variety Herbert Smith; Gaza, Amir, Prince Fushimi, Mitylene, Penzance, Nanny Nun, Darius, White Sentinel, Ettrick, White Conqueror and Irma, these being outstanding, although all were extremely beautiful.

Large, golden Trumpet sorts were shown chiefly by the Welsh Bulb Fields Co., and these were in splendid condition, and included such grand sorts as Remus, Rugby, Bimbo, Nugget, Romulus and Canute; other good Trumpet varieties, of paler colouring, were Alba, May, Tantalus, Melyn, Bronwen and Phyllis Vansittart.

Messrs. Sutton and Sons Ltd. had a tastefully arranged group consisting chiefly of Trumpet Daffodils, many of which were seedlings and, unfortunately, at present unnamed. The blooms were in grand condition and were arranged in decorative baskets in association with Asparagus sprays. Among good named sorts in this group were Midas, a dainty Poeticus variety; Golden Pedestal, Tunis, Treskerby, Cicely, and Nissa.

Another grand display was staged by The Donard Nursery Co., the blooms being in splendid condition. There were fine examples of Brightling, Royal Lancer, Copperbowl, Beauty of Radnor, Croesus, Redlight, Gallipoli and Mitylene, among Incomparabilis sorts, while noteworthy Trumpet varieties were Rosemorran Giant, Tace, Gog, Herbert Smith, Magog, Grenade, Eskimo, Beersheba, White Nile, Kantara, Tenedos and Everest.

Messrs. J. W. Barr staged a small group of numerous sorts, but it was far from decoratively arranged, and the red tag-labels detracted considerably from any attractions the display might have possessed. Messrs. Tyler Bros. staged vases of the rich golden Trumpet variety Grand Master, while among good sorts displayed by Messrs. R. H. Bath, Ltd., were Advance Guard, Golden Sunset, Aerolite, The Don, The Marquis and Golden Sunrise, all Trumpet varieties; several double-flowered sorts, and Brilliancy and Gaiety.

A really grand and very extensive display of splendid blooms was set up by Mr. J. L. Richardson. Trumpet varieties were represented by Golden Goblet, Master Robert, Tipperary Lad, Royalist, Alchemist and Hebron—golden sorts—and White Emperor, Kantara, Helen O'Hara, Halfa, Beersheba (very fine), Tenedos, Marquis of Headfort and Eskimo—cream-coloured varieties. There were grand blooms of such choice Incomparabilis varieties as Brightling, Gallipoli, Folly, Silver Plane, Mitylene, Festive, Hades, White Sentinel, Hymethus and Hera; while outstanding Poeticus varieties were Princess Miriam, Inca, Firetail, Mystic, Sunstar, Minuet, The Sahib, Marco, Dactyl and Matthew Arnold.

Grand blooms of many choice Narcissus novelties were displayed by Mr. G. L. Wilson. He had splendid examples of Beersheba, Lord Antrim, Honey Boy, Tenedos, White Nile, Sorley Boy, Bulwark, Marmora, the delicately-shaded Suda, Nevis, Eskimo and Quartz, together with several good seedlings, among Trumpet varieties; also several very lovely Incomparabilis varieties and, among Poeticus Narcissi, the dainty Mystic, Glorious, New Moon, Fairy Circle and Medusa.

A superb collection of new varieties and wonderful seedlings (under number) was arranged in one corner of the hall, but alas! there was no card to identify the exhibit with any person. The exhibitor, however, was Mr. P. D. Williams, of Lanarth, Cornwall. His varieties Porthilly, Grayling, Crocus, Scarlet Lancer and the deep orange-gold No. 215, were magnificent, while numerous Poeticus, and white Bairii sorts, were scarcely less beautiful.

Messrs. John Wilson, Ltd., had good blooms of Tresserve, Croesus, Mrs. R. O. Backhouse, Mitylene and Red Cross; while Messrs. D. Stewart and Son made special features of Macebearer, Lord Kitchener, Brilliancy, Primrose Phoenix, Mermaid, Tony, a giant Leedsii of charm; Bernardino, Van Waveren's Giant, Sunrise and Buttercup. They also had several miniature Narcissi, including N. Jonquilla, N. triandrus var. calathinus, N. juncifolius, and N. Bulbocodium in several varieties.

Mr. Herbert G. Longford staged, in large sheaves, good blooms of several choice Poeticus and Trumpet varieties.

Messrs. Barford and Perkins, Ltd., displayed one of their bulb sterilising plants, capable of "cooking" 3 cwts. of bulbs at a time—a type popular among commercial bulb-growers in this country.

THE ORCHID CLUB.

At the meeting of the Orchid Club, held on April 12, there was a choice but not large collection of exhibits. Dendrobiums and Odontiodas were the predominating feature.

Premier Diploma.

Dendrobium Renown var. Carmen.—This fine variety received the Club's lower award on April 20, 1928, but the Committee considered that the improvement shown in the breadth and colour of the segments justified the bestowal of the higher award. Exhibited by F. T. Paul, Esq.

New Hybrid.

Cypripedium bellbeechense (*C. bellatulum* × *C. beechense*).— Submitted for registration by F. T Paul, Esq.,

Groups.

Dr. F. Craven Moore (gr. Mr. Gilden) exhibited a select group of magnificently grown and flowered Dendrobiums and Odontiodas. Among the former were several plants of D. Thwaitesiae, Veitch's var., D. Wardianum and

D.Sybil var. superbum. The Odontiodas included O. Cora with a branched spike of thirty-four large flowers; O. Gladys var. superba, a fine variety carrying fifty-five brightly-marbled blooms; O. Marathon, with twelve huge flowers, and several others. The centre of this fine group was occupied by beautiful plants of Selenipedium macrochilum, while Eulophia Saundersiana, with its curious flowers smelling like freshly caught trout, was also noted.

A. T. Cussons, Esq. (gr. Mr. Dalgleish), showed a mixed group which included several plants of the pretty Odontioda heatonensis, O. Brilliant, with a good branched spike; various Dendrobiums, and a few late Cypripediums.

F. T. Paul, Esq., F.R.C.S., staged a few select Dendrobiums including a promising seedling between D. Sir F. Moore and D. Cybele; the fine D. Renown var. Carmen and an interesting new Cypripedium hybrid, raised at Cloudeslee, between C. bellatulum and C. beechense.

B. J. Beckton, Esq. (gr. Mr. W. A. Stewart) exhibited well-flowered plants of Odontoglossum Oerstedii and Pleurothallis astriophora, together with a series of photographs of Orchid species, taken by himself, being additions to the series shown last session. Several species were photographed in duplicate, showing firstly the habit of the plant, and secondly, the flower exactly life size. Among the species illustrated the following stood out as distinct examples of the wonderful modifications of structure which are found in the Order Orchidaceae. Catasetum Darwinianum, C. Bungerothii, C. Oerstedii and C. fimbriatum; Stanhopea occulata and S. ecornuta; Mormodes pardinum, Haemaria discolor, Neomoorea irrorata, Maxillaria Fletcheriana, Cirrhopetalum longissimum, Cypripedium Lowii and Bulbophyllum saltatorium. Coryanthes macrantha was represented by a series of five photographs showing the development of the bloom from the early bud stage to the fully developed blossom, and one full-size showing the curious provision the plant makes for effective fertilisation. A vote of thanks was passed for this exhibit.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of this Society was held in the R.H.S. Hall, on Monday, April 8, Mr. T. R. Butler presiding. Two new members were elected. Five members withdrew £21 15s. 4d., *i.e.*, double the amount of the interest on their deposit accounts; and five members over the age of seventy years withdrew £251 12s. 0d. from their deposit accounts. The sum of £209 12s. 3d. was passed for payment to the nominees of five deceased members. The sick-pay for the month on the Ordinary side amounted to £242 7s. 4d., and on the State side to £203 14s. 10d.; maternity claims came to £4 10s. 0d. Grants amounting to £48 19s. 0d. were made to fourteen members towards optical and dental treatment, and several other cases were considered.

READING GARDENERS'.

The final fortnightly meeting of this Association for the spring session was held in the Abbey Hall, on April 8, the President, Frank Moring, Esq., presiding over a really good attendance of members.

In Class 1, for the best floral decoration of a dinner table six feet by four feet, the first prize was awarded to Mr. H. R. Tuffin, The Gardens, Iris Court, Pangbourne (Pink Carnations); second, Mr. R. H. S. Dann, The Gardens, Greenlands, Henley-on-Thames (Carnations and Primula malacoides); and third, Mr. A. W. Gower, The Gardens, Calcot Grange (a deep-coloured P. malacoides).

In Class 2 (for under-gardeners only), for a vase of Daffodils arranged for effect, Mr. R. H. S. Dann was first, and Mr. R. H. Goodchild, The Gardens, Cliffe House, Mapledurham, second.

It being "hospital night," a collection of cut flowers was sent to the Royal Berkshire Hospital after the meeting; it included Carnations, Primula malacoides, Cinerarias and Daffodils, and these were contributed by Messrs. Broomfield, Dow, C. Cook, Fulker, Gower, Moulton, Plumridge, Townsend, Tuffin, Turnham and J. Wynn. A collection taken in the room towards the funds of the institution enabled the Association to send a donation of £3 10s. 0d.

The lecture for the evening was on "Gladioli," by Mr. T. C. Waite, of the Hardy Plant Nurseries, Basingstoke Road, Reading. He stated that Gladioli have been grown in English gardens for at least five hundred years. He described the various species that had been introduced, and gave details of the preparation of the soil (deep digging being essential), planting the corms, fertilisers, watering, mulching, cutting the flower spikes, and lifting and storing the corms. Then followed useful suggestions as to raising plants from seeds, and, in conclusion, the best varieties in the various colours were given. There was only time for a short discussion, at the close of which a hearty vote of thanks was accorded Mr. Waite for his practical and interesting lecture.

Obituary.

Joseph May.—We regret to learn of the death of Mr. Joseph May, who passed away on Wednesday, April 10, after a very short illness, at the age of eighty-one. He was for many years well-known as gardener at Northaw House, Potters Bar, and an account of his career appeared in these columns on October 8, 1927. He retired about seven years ago, and by the kindness of Mr. J. B. Joel was able to spend his remaining years with his son, at the Gardens, Childwick Bury, where, until a few days before his death, he took a keen interest in everything pertaining to the garden. Always keen on hardy fruits, the sight of a well-trained tree would arouse his enthusiasm and give him the greatest pleasure.

Samuel George Randall.—Mr. S. G. Randall, who was associated with the business and public life of Skegness for nearly half-a-century, died at Sleaford, Lincolnshire, on Friday, April 12, at the age of seventy-eight. He went to Skegness from Sandbeck Park, the seat of the Earl of Scarborough, and while an employee of his Lordship he planted practically the whole of the trees in the pleasure gardens, and carried out a great deal of other development work of this nature in the pioneer days of the Lincolnshire resort. Mr. Randall subsequently built up a successful florist and market garden business, and was one of the best known horticulturists in Lincolnshire. He was elected to the old Skegness Local Board, and later to the Urban District Council, on which he sat for many years, being Chairman in 1897-98 and 1909-10.

Friedrich Ries.—We regret to learn of the death, which took place on February 28, of Friedrich Ries, for nearly forty years in the service of the Parks Department of Karlsruhe, Germany, and from 1889 to 1917 Director. When he first came to the town, after a thorough and varied preparatory training, he was partly occupied in the street department, the open spaces being comparatively few and unimportant. During his term of service, however, and especially after he assumed full charge, the parks and other public open spaces increased enormously, and imposed an ever-growing burden which, however, he was only too willing to assume. Ries was a "giant for work," and not only performed most thoroughly the work necessitated by his office, but also found time for the raising of Petunias, a new variety of which he named "Karlsruhe Rathaus," and also —and above all— devoted himself passionately to the growing of Roses, which he loved and perfectly understood. All this imposed a serious strain on his strength, and in 1915 he was forced to apply to be placed on the retired list. The war conditions prevented this until 1917, but from then onwards he has lived in retirement at Durlach, being nearly eighty years old at the date of his death. It is, perhaps, a platitude to state that with him one more of the old school of gardeners has passed away, yet it is in his case particularly true. He was a master of his craft, and although in time his name may be forgotten, the exquisite parks and woodlands of Karlsruhe will bear eternal, although silent tribute to his genius and his toil.

James Vert.—The death occurred at Stowmarket, on Wednesday, April 10, of Mr. James Vert, Chairman of Messrs. James Vert and Sons, Ltd., nurserymen, seedsmen and florists, of Saffron Walden, at the age of seventy-six. He had been in failing health for some time past. Mr. Vert was a noted horticulturist, and for many years he was a successful exhibitor of fruits and flowers. He was head gardener at Audley End, Saffron Walden, to Charles Cornwallis, fifth Baron Braybrooke, and to Lord Howard de Walden, and when Lord Howard de Walden's lease of Audley End terminated in 1912, he removed with him and continued in his service at Chirk Castle, Wales, until his retirement four years ago, when he went to live at Stowmarket. Mr. Vert purchased the old-established business of Messrs. Webb and Brand, nurserymen, of Saffron Walden, about twenty years ago, and when it was registered as a limited company he became Chairman of Directors, and held the office until his death. He was twice married and leaves a widow and eight children. The funeral took place at Littlebury Churchyard, near Saffron Walden, on Saturday afternoon last.

ANSWERS TO CORRESPONDENTS.

Black Hamburg Grapes Failing.—*W. H. S.* It is difficult to give a reason why your vines have failed. You should have stated the age of the vines, and sent some roots and foliage for examination, besides stating the previous treatment given, as last season was a most favourable one for all vines young and old. Failures may occur from various causes, such as over-cropping; a cold, inert border that does not permit the free passage of air and water; too much organic manure; excessive dryness at the roots; or removing a quantity of fully developed foliage at one time. Any of these mistakes may have some bearing on the failure, and although the foliage may look healthy, if the borders lack potash and lime the results cannot be satisfactory.

Destruction of Yew Tree Stumps.—*H. C.* There is really no good way of quickly destroying tree butts that have been left in the ground. It is sometimes stated that by boring holes in them, filling the holes with saltpetre and allowing them to stand for several months, they may then be burnt by filling the holes with paraffin and setting on fire. In practice this rarely acts, although now and then some measure of success may follow.

Names of Plants—*G.* 1, Erica carnea var. alba; 2, E. carnea var.; 3, E. carnea; 4, specimen missing; 5, E. carnea alba; 6, E. cinerea alba; 7, E. carnea var.; 8, Forsythia suspensa; 9, F. intermedia. — *G.* 2. 1, Prunus subhirtella; 2, Forsythia suspensa. — *G.*3. 3, Ribes sanguineum var. atrosanguineum; 4, Epimedium pinnatum; 5, Saxifraga cordifolia var.; 6, Ribes sanguineum; 7, Ribes sanguineum var. carneum.

Pelargoniums Unhealthy.—*P. G. C.* There were no disease organisms present on the Pelargonium shoots, and the trouble is probably due to some error in cultivation. The constricted nodes suggest that the water supply is at fault. Great care has to be taken in the amount of water afforded the plants as they are going to rest in the autumn, and also as they commence growth in spring.

Treatment of Arum Lilies after Flowering. *L. B.* Opinion varies with regard to the treatment of Arum Lilies, but as success is obtained by either method, we suggest that you retain the one that has proved successful in your own case.

Communications Received.—F. W. R.—R. M.—G. B. —J. P.—J. C.—L. D. R.—W. A.—K. M.—G. B. T. E. W.—G. H. P.—W. L.—F. E.—S. R.—G. T.

THE
Gardeners' Chronicle

No. 2209.—*SATURDAY, APRIL* 27, 1929.

CONTENTS.

Agricultural Research Bureaux 304
Alpine garden—
  Allosorus crispus ... 309
Arable land, manuring 314
Book, notice of—
  The Perfumes of Flowers 312
Celery, marketing ... 304
Daffodil names, classified list of 304
Daffodil Sunday at Kew... 303
Eucalyptus, the genus 303
Fruit blossoms, order of flowering and pollenation of 313
Fruit garden—
  Strawberry, the Alpine 315
Gardener's pay and agricultural scholarships 314
Garnett, Mr. C. S. ... 304
Glossiness in flowers ... 314
Guildford Gardeners' Annual Show ... 304
Hardy flower border—
  Poterium obtusum... 309
International Horticultural Congress in London, 1930 ... 303
Lambourne, the late Lord... 304
Moray Field Club ... 304
Narcissus minimus ... 314
Obituary—
  Mr. W. J. Jefferies... 318
Plants new or noteworthy—
  Rhododendron leucaspis 308
Potato, the future of the 314
Snowdrops 314
Societies—
  Deeside Field Club... 317
  Instow Spring Flower Show 317
  National Rose ... 315
  Royal Caledonian... 317
  Royal Horticultural 316
Spraying fruit trees in open blossom ... 303
Trees and shrubs—
  Corylus Colurna ... 308
  Spiraea bullata ... 308
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 310
Week's work, the ... 306
Welsh garden, notes from a 311
Wisley, notes from ... 312
Woodland garden—
  Viola canadensis ... 309

ILLUSTRATIONS.

Garnett, Mr. C. S.... 304
Narcissus Golden Ingot. 305 ; N. Solleret 307
Viola canadensis 309
Ward's, Mr. F. Kingdon, tenth expedition in Asia 310, 311

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 49·3°.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, April 24, 10 a.m. (Greenwich time). Bar. 30. Temp. 48°. Weather, Fine.

International Horticultural Congress, London, 1930.

As already intimated in these pages, the Eighth International Horticultural Congress, held in Vienna, Austria, in 1927, accepted an invitation from the Royal Horticultural Society to hold the Ninth International Horticultural Congress in London. It has been decided that this Horticultural Congress shall be held in London from August 7 to August 15, 1930, immediately before the Fifth International Botanical Congress, which is being held in Cambridge, from August 16 to August 23. The members of the Executive Committee appointed to make the necessary arrangements for the Congress are Professor B. T. Barker, M.A., of the University of Bristol; Mr. E. A. Bowles, M.A., V.M.H.; Mr. E. A. Bunyard, F.L.S.; Mr. F. J. Chittenden, F.L.S., V.M.H., Director of the R.H.S. Gardens at Wisley; Sir Daniel Hall, M.A., F.R.S., Director of the John Innes Horticultural Institute; Mr. R. G. Hatton, M.A., of the East Malling Research Station; Sir William Lawrence, Bt.; Mr. G. W. Leak; Mr. C. T. Musgrave, V.M.H., Dr. A. B. Rendle, M.A., F.R.S., V.M.H., of South Kensington Museum; and Mr. H. V. Taylor, O.B.E., B.Sc., Commissioner for Horticulture at the Ministry of Agriculture; with Colonel F. R. Durham, Secretary of the Royal Horticultural Society, as Secretary. Judging from the preliminary programme received, the Congress should prove immensely interesting to horticulturists, and it is therefore desirable that those whose aim is progress in matters horticultural should take part and express their intention to do so at an early date. The subscription for membership of the Congress will be £1, which should be paid to the Secretary of the Royal Horticultural Society, Vincent Square, S.W.1. The preliminary programme for the Congress is as follows:—August 7, Assemblage of Congress; August 8, Opening of Congress and Lectures in the afternoon; August 9 and 10, Excursions both days; August 11 and 12, Lectures both days; August 13, Excursions all day; August 14, Lectures in the morning, and Flower Show; August 15, Final Report of Congress by Chairman, Flower Show, and Close of Congress. The main subject for discussion at the Congress will be "Propagation, Vegetative and Seminal," for which papers and communications have been and are invited, and Dr. Van der Lek (Holland), Dr. R. J. Graham (Great Britain), Professor Priestley (Great Britain), Niels Esbjerg (Denmark), G. E. Yerkes (U.S.A.), Carl A. Dahl (Sweden), Dr. Webber (U.S.A.), Professor Faes (Switzerland), Franz Richter (France), Professor Denny (U.S.A.), Miss M. E. Reid (U.S.A.), Dr. Redcliffe Salaman (Great Britain), and Dr. Erwin Baur (Germany), etc., etc., have signified their intention of presenting papers. The Committee desires to point out that there will be other sections, and it is prepared to receive suggestions for papers for consideration. An extensive programme for visits to research stations and gardens of horticultural interest throughout the kingdom is being arranged. The Committees appointed at the Congress held in Vienna in 1927 will present their reports:—(I) On Nomenclature—in view of the Botanical Congress at Cambridge, this report, and the discussion on it, will be of outstanding interest; (II) On Awards; (III) On Colour; (IV) On Horticultural Institutions and Research; (V) On International Exchange of Young Gardeners; and (VI) On the Development of the International Committee. Communications made to the Congress by means of papers, or participation in the general discussion, will be permissible in English, French and German. Further information will be published in due course, and also sent to all who signify their intention of attending the Congress. All correspondence should be addressed to the Secretary, R.H.S., Vincent Square, London, S.W.1.

Gardeners' Royal Benevolent Institution.—Mr. Lionel N. de Rothschild, O.B.E., will preside at the eighty-fourth Anniversary Festival Dinner in aid of the funds of The Gardeners' Royal Benevolent Institution, at the May Fair Hotel, on Wednesday, June 26.

Daffodil Sunday at Kew.—At least a week before the Daffodils were at their best, Sunday, April 21, was, according to the daily press, Daffodil Sunday at Kew. Although not quite so luxuriant as in most seasons, due to the cold and dry weather, the thousands of visitors found plenty of Daffodils to admire in the grass and woodland. The varieties are planted mostly in groups and broad stretches of one variety, but there are also some very effective plantings in mixture near the main entrance and elsewhere. Not more than a dozen varieties are planted in large numbers, with the fine, rich yellow, trumpet variety Emperor in the greatest quantity. Most of the large plantings in the Arboretum were made twenty to thirty years ago, and the bulbs have not been disturbed since. In most places the Trumpet varieties predominate and are planted in groups and masses of varying sizes where, in the grass, or with the new growth of the Bluebells as a ground-work, they are much more effective than planted thickly in beds. In addition to Emperor, the Trumpet varieties planted in the greatest numbers are Empress, Victoria, Horsfieldii, Telamonius plenus and pallidus praecox. Of the other sections, Sir Watkin, Barrii conspicuus, Mrs. Langtry, Autocrat, Frank Miles, Stella, John Bain, poeticus praecox, and—the last to flower—the true poeticus, are found to succeed best naturalised in the grass at Kew. On the sunny slopes of the mound near Cumberland Gate, where they are the first to open, there has been a succession of Daffodil blooms for more than a month past.

Cornish Broccoli.—The Prime Minister's recent reference to the exportation of Cornish Broccoli to the Continent has drawn special attention to the cultivation of this crop. Up to about three years ago, the Broccoli produced in Cornwall was grown from local seeds and did not produce the firm, white curds which the market so desires. Seeds of superior strains were obtained through the agency of the Ministry of Agriculture, and Cornish Broccoli graded up in quality. A deputation of Cornish growers, with the County Horticultural Superintendent, visited the Continent in January last to examine the possibilities of marketing Broccoli at the more important centres there. As a result, they came back determined to try to sell on the Continent, to grade and pack the consignments, and incidentally to get permission from the Ministry to use the National Mark on them. The Ministry agreed and made regulations prescribing grades and marks, the whole organisation and arrangement being agreed to by the Cornwall Branch of the National Farmers' Union and the County Horticultural Superintendent. Seven growers applied for permission to use the Mark, and consignments were despatched to Brussels and Cologne.

The Genus Eucalyptus.—It would appear that the publication of the late Mr. J. H. Maiden's monograph on the genus Eucalyptus (*A Critical Revision of the Genus Eucalyptus*) under the authority of the Government of the State of New South Wales, is proceeding apace, as we have now received Part I of Vol. VIII (Part LXXI of the complete work), Part X of Vol. VII having been received barely two months ago. The present issue is a fairly comprehensive one, for in it thirty-eight Eucalypti are described, namely, E. Bucknelli, E. perplexa, E. conglomerata, E. tropica, E. pseudo-piperita, E. urceolaris, E. Callanii, E. pachycalyx, E. subviridis, E. McClatchie, E. Mortoniana, E. Dixsoni, E. Globulus, E. g. var. compacta, E. bicostata, E. St. Johni, E. pseudo-globulus, E. paradoxa, E. oviformis, E. niphophila, E. congener, E. nubilis, E. Grasbyi, E. Kochii, E. platycorys, E. Kingsmilli, E. scyphocalyx, E. Helmsii, E. concinna, E. ochrophylla, E. Nicholi, E. Crawfordi, E. glaucescens, E. Archeri, E. subcrenulata, E. Tindalae, E. Wilkinsoniana and E. nigra.

Gardens and Charity.—The scheme under which many of the most beautiful and interesting gardens in England and Wales were thrown open to the public in 1928 is to be continued this year. Through the great kindness of the owners, 727 gardens were opened between the months of April and September last year, and the generous response already made gives every reason to hope that there will be an even larger number this season. The scheme is organised by the County Nursing Associations and the Queen's Institute of District Nursing, 58, Victoria Street, London, S.W.1, from which address lists will shortly be available, giving the names of the owners and addresses of the gardens, and the dates on which the gardens are to be open. A charge of one shilling is made for admission, and this money is divided equally between the two nursing associations, so that the scheme not only gives pleasure to garden lovers, but helps to provide skilled nursing for those who are unable to afford the services of a private nurse. The Gardens Committee desires to take this opportunity of acknowledging the debt that is due to the many gardeners who give so generously of their time and skill in order to make the scheme a success.

Spraying Fruit Trees in Open Blossom.—The danger in spraying fruit trees when in open blossom with washes containing arsenate of lead is that visiting bees may be killed. The lead arsenate washes are certainly of great value in exterminating the Winter Moths, the larvae of which do considerable damage to the trees, but the spraying should be done either just before the blossoms open, or immediately after the petals have fallen. There may be some little difficulty in arranging this in big orchards, as the different varieties of fruits come into blossom at different times. Nevertheless, it should be aimed at, and certainly there should be no indiscriminate spraying of open blossom with lead arsenate. If any cases are noticed where bees die in numbers in such circumstances as are described, they should be reported to the Ministry of Agriculture, 10, Whitehall Place, London, S.W.1.

The "Classified List of Daffodil Names."—Among spring flowers, the Daffodil takes pride of place in English gardens, and it is appropriate at this season of the year to draw the attention of our readers to the standard reference work on Daffodil nomenclature—the *Classified List of Daffodil Names*—issued by the Royal Horticultural Society, and obtainable from its office, at Vincent Square, Westminster, price 1s. This list has been revised and brought up-to-date. The previous edition, published in 1927, is now exhausted, and since this was issued some six hundred names have been registered by the Society; these, together with a number registered by the National Daffodil Society of New Zealand, are included in the 1929 edition.

Celery Marketing.—At a well-attended Conference at the Midland Agricultural and Dairy College, Sutton Bonington, Loughborough, Mr. A. Jones, B.Sc., Advisory Economist, read a paper on "Celery Marketing." He pointed out that the bulk of the Celery grown in this country is in four areas—Lincolnshire, Cambridgeshire, Lancashire and Cheshire; that the acreage has increased from about 3,000 in 1918, to about 6,000 at the present time; that the increased area was partly to make up for the losses due to disease; that the work of Mr. Stirrup, on spraying, has resulted in heavier crops; that, in consequence, present production meets or more than meets present requirements; that, so far as the Lincolnshire area is concerned, the methods of marketing leave much to be desired; and that, in his opinion, Celery should be graded so that those who want the best may obtain it without having to purchase a certain proportion of inferior sticks in each bundle. As a complement to this paper, Mr. J. G. Murray, Horticultural Organiser for Lindsey, described his experiments in washing, grading and wrapping each stick separately in Celophane. He stated that the retailers obtained a quick and increased sale for such produce and were prepared to pay fifty per cent. more for it. Transport charges were reduced to one-half, and the produce was more acceptable to the shops and to the purchaser. He considered it extremely desirable to increase the demand for Celery, and this could only be done by offering it in a more attractive form. In his opinion, there is a great need for grading and washing by producers at some central depot near the point of production, and that in all probability it would be found an advantage to distribute the washed Celery in crates. The following points were brought out in the subsequent discussion:—Gluts are frequent at certain markets and could, by organisation, be avoided; crops have increased owing to the spraying experiments conducted by Mr. Stirrup, the Advisory Mycologist at the College; much Celery is too big and coarse for the better class consumers, and the retail price of Celery in shops is much too high.

Postponement of F.H.P.I. Conference.—We learn that at the request of the French delegation the annual Conference of the Fédération Horticole Professionelle Internationale, arranged to be held in London, in May, has been postponed until July 3, 4 and 5.

Moray Field Club.—The Annual Meeting of the members of this Club was held in Elgin, the Rev. George Birnie, B.D., President, in the chair. Mr. A. Millar, M.A., Alves, Secretary, gave a highly satisfactory account of the activities of the Club during the past season. The membership now numbers seventy-five, and eight field outings were held. At all of these the great majority of the members attended, with the exception of the joint outing with the Deeside (Aberdeenshire) Field Club. The venue then was rather far away for the convenience of the members, but the hope was expressed that a joint outing would again be arranged, this time nearer the Moray Club's headquarters. A syllabus was drawn up for the coming season's excursions as follows:—May 4, Elgin Cathedral; May 18, Roman Well, Burghead; June 1, Kinloss Abbey and Findhorn; June 15, Leuchars; June 22, Joint meeting with Deeside Field Club, if possible; August 31, Darnaway; September 14, Garmouth. All of these estates and districts should yield a vast amount of pleasure and instruction to those taking part in the outings.

Mr. C. S. Garnett.—Grandson of the late Mr. T. H. Garnett—formerly of Wakefield, and an enthusiastic cultivator of Japanese Chrysanthemums in the earlier years of their development as exhibition flowers—Mr. C. S. Garnett commenced his horticultural experience with Messrs. Horsmans, a firm of Bradford nurserymen and seedsmen that has now disappeared, but even during his school days he was greatly interested in gardening. When his family left the Bradford district he began that scientific training which has proved so useful to him as a consulting horticulturist and plant collector. The war period broke into his studies, but these were subsequently resumed at the University of Sheffield, with special reference to horticultural matters. In 1928 he organised and led a successful plant-collecting expedition to north-central Brazil, with Orchids as the special objective. Mr. C. S. Garnett contemplates another Orchid and general plant-hunting expedition to the mountainous regions of tropical South America. He possesses an interesting collection of Orchids and rare plants at Derby, and has conducted work on the raising of little-known tropical fruits.

MR. C. S. GARNETT.

Edinburgh Royal Botanic Garden Guild's "Journal."—The current issue of the *Journal* of the Edinburgh Royal Botanic Garden Guild is Part I of the second volume, and it is accompanied by the title page and index for binding up with the four parts of Vol. I. It was a happy idea that led to the publication in this issue of an account of Benmore and Puck's Glen, because of the association of the latter with the late Sir Isaac Bayley Balfour—a memorial dedicated to his memory—who was the first President of the Guild. Two illustrations, including the Memorial Rest Hut, accompany the account. "After Thirty Years" is a succession of reminiscences by Mr. D. MacIntyre, with a description of the Moanalua Estate of 8,821 acres he manages at Honolulu. "A few Malay Customs and Beliefs," by Mr. G. D. Forbes, sets forth the superstitions and customs that control the daily life of a Malay, from birth to death. Mr. D. Stewart, in discussing "Horticultural Teaching in the East of Scotland," indicates the facilities for horticultural training afforded by the horticultural section of the Edinburgh and East of Scotland College of Agriculture. In "The Dahlia in America," Mr. G. Masson makes an interesting statement which it would not be easy to substantiate, *i.e.*, "Up to 1912, Europe led in the development and introduction of better Dahlias, but that is not so now, for America not only leads, but has European varieties outclassed, so that we are exporting our better sorts to the Mother Country. As the Dahlia is a native of America, it is not to be wondered at that the States now lead the world in the development of all that is best in this glorious Fall Flower." Mr. G. White gives "Impressions of New Zealand," and draws attention to the fact that Blackberries and Gorse are two of the most noxious weeds in the country, and that "there are few openings for skilled gardeners, and large estates are non-existent." The rest of the *Journal* is occupied by domestic matters, including the names and addresses of members of the Guild.

Agricultural Research Bureaux.—In our issue for December 22, 1928 (p. 482), we announced that definite proposals had been laid before the Government for the establishment of a series of bureaux, or clearing houses, for the collection and interchange of information in eight branches of agricultural science. These proposals were accepted by the Government, and the governing bodies of the various institutes suggested as suitable for bureaux also gave their consent, with the result that three bureaux have already been opened. These are: The Bureau of Animal Nutrition, at the Rowett Research Institute, at Aberdeen, under the direction of Dr. J. B. Orr; the Bureau of Animal Genetics, at the Animal Breeding Research Institute, Edinburgh, under Professor F. E. Crew; and the Bureau of Fruit Production and Storage, at the East Malling Research Station, Kent, under Mr. R. G. Hatton. On May 1, the Bureau of Soil Science will be opened at the Rothamsted Experimental Station, under the control of Sir John Russell, and it is contemplated opening the remaining four bureaux during the coming summer. These are: Of Animal Health, at the Veterinary Research Laboratory, Weybridge, under Dr. W. H. Andrews; of Plant Genetics (other than herbage plants), at the Plant Breeding Institute, Cambridge, under Sir Rowland Biffen; of Plant Genetics (herbage plants), at the Welsh Plant Breeding Institute, Aberystwyth, under Professor F. E. Stapleton; and the Bureau of Agricultural Parasitology, at the Institute of Agricultural Parasitology, St. Albans, under Dr. W. Leiper. The movement, we are informed, has received the wide approval of the Governments of the Empire.

The late Lord Lambourne.—Lord Lambourne, the late President of the Royal Horticultural Society, left about £54,000, in addition to settled estate in Essex, Monmouthshire and Glamorganshire. He made numerous bequests to the Coldstream Guards and Masonic institutions, and left £500 to his keeper, Mr. F. West, and £200 to his Gardener at Bishops Hall, Mr. A. Bagg.

Guildford Gardeners' Annual Show.—The seventh Annual Show of the Guildford and District Gardeners' Association is to be held on July 17, in the grounds of Stoke Park, Guildford, and a very attractive schedule has been arranged. Numerous cups and medals are offered for competition, in addition to the money prizes, and, beside the horticultural classes, there is a special handicraft section. It is interesting to note in connection with this extremely active Association, that it continues to issue its *Monthly Journal*, in which are chronicled the activities of the Association, together with authoritative articles on various topical subjects. For instance, the issue for the present month contains reports of two lectures delivered before the Association; an article by Mr. W. Auton on the use of the watering-can; a review of the work for the month, and various notes and announcements. We notice that summer visits have already been planned to the gardens of Mrs. Joicey, Sunningdale Park; Sir W. Lawrence, Burford; and the R.H.S. Gardens, Wisley; and others are contemplated but have not been finally decided upon.

Types of Spades in Germany.—The English gardener is somewhat of a connoisseur in tools, and would probably be aware of at least half-a-dozen different kinds of spades, to be used for different operations in his craft; but it is doubtful whether there are so many kinds of spade-blades in common use in this country as there are in Germany. In that country, twenty-five different kinds are used, and all are named separately. They are:—Dachau, Elsass, Weinsberg, Rott, Leipzig, Dollendorf, Kirchheim, Spreewald, Ansbach, Schuh, Lüneburg, Bremen, Minden, Aurich, Hellweg, Weser, Oberschlesien, Berg, Kassel, Frankfurt (two), Lothringen, Rothenburg and Nürnberg. As will be observed, the spades are called after the districts where they are used; but they are not, of course, confined to these neighbourhoods.

Haarlem Daffodil Show. — Owing to the abnormal lateness of the flowering season, the proposed special Daffodil Show, to be held at Haarlem (Holland), has been postponed again, and will now be held on May 1 and 2.

Honour for Professor Hugo de Vries.—At the meeting of the Linnean Society of London, held on April 4, the President announced that the Council of the Society had resolved to award the Linnean Gold Medal to Professor Hugo de Vries, F.M.L.S., Lunteren, Holland.

Appointments for the Ensuing Week. — MONDAY, APRIL 29: Admiralty Horticultural Society's Spring Exhibition (at the Admiralty). TUESDAY, APRIL 30: Rhododendron Association's Exhibition (two days); Royal West Renfrewshire Horticultural Society's meeting. WEDNESDAY, MAY 1: National Carnation and Picotee Society's meeting; Rotherham and District Horticultural and Chrysanthemum Society's meeting; Gainsborough Allotment Holders' Association's meeting. THURSDAY, MAY 2: Bideford and District Horticultural Society's meeting. FRIDAY, MAY 3: Manchester and North of England Orchid Society's Exhibition. SATURDAY, MAY 4: Leeds Paxton Society's Open Exhibition Night.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Sale of Plants at Ealing Park.*—The sale of Mrs. Lawrence's magnificent collection of stove and greenhouse plants commenced on Thursday last, and will be finished to-night. The first day was wet and cold; nevertheless, upwards of fifty people attended, consisting of the principal metropolitan nurserymen, several noblemen and gentlemen's gardeners, and one or two gentlemen. Among the latter we noticed, W. Upton, Esq., of Forest Hill, and H. Colyer, Esq., of Dartford. The plants were for the most part in good condition and realised, upon the whole, fair prices. When we were present on Thursday, some of the largest of the specimens were brought forward. We observed that the enormous Epacris grandiflora, which for many years formed the crown head of the Ealing Park collection at the Chiswick fêtes, was bought by Mr. Eyles for the Crystal Palace Company for £12 10s.; this fine plant was quite six feet high, and as much through, and covered with bloom. A Polygala acuminata of similar size, and also in flower, was put up, and fetched £10 15s.; this was purchased by Mr. Upton, who also became the fortunate possessor of a magnificent Azalea exquisita, for which he paid the handsome sum of £17 17s.; this plant was in all respects in excellent condition, and measured about five feet in height and six feet in width. The same buyer likewise purchased a beautiful Azalea variegata, four feet by five feet, for which £15 15s. was paid. An extremely good plant of Azalea Gledstanesi fetched £10 10s.; this was purchased by —Johnstone, Esq., of Oak House, Feltham. Azalea Lawrenceana (which did not appear to be different from Minerva) fetched the great price of £24 3s.; this was bought by Mr. Upton; it was certainly a splendidly-grown plant, measuring four feet in height and six feet in width. Azalea Apollo, five feet by four feet, fetched £8 10s.; and A. Gledstanesi, £7 5s. Azaleas altogether fetched good prices, as did greenhouse plants generally, although some Heaths, Eriostemons, Podolobiums, Indigofera decora and a few other things, sold for prices considerably below their value. Stove plants seemed less in demand than greenhouse plants, and therefore realised less money. Beautiful bushes of Ixora javanica, four-and-a-half feet in height, and three-and-a-half feet in width, only fetched £2 10s.; Dipladenia crassinoda, four feet high, and three feet through, 10s.; Allamanda cathartica, five feet high and four feet wide, £2 15s.; and other plants of this description fetched similar prices. The number of lots sold was 161; the principal purchasers, in addition to those already named, were Mr. Colyer, Mr. Ambrose Basset, of Stamford Hill; the Earl of Stamford and Warrington; Mr. Dods, gardener to Sir John Cathcart, Bart.; Mr. Walker, of Acton; Mr. James Veitch, of Chelsea; and Messrs. Fraser of Leabridge. Yesterday about the same number of buyers assembled, and a similar number of lots was sold, but they did not fetch near such high prices as they did on Thursday. The plants were, however, generally smaller. *Gard. Chron., April* 29, 1854.

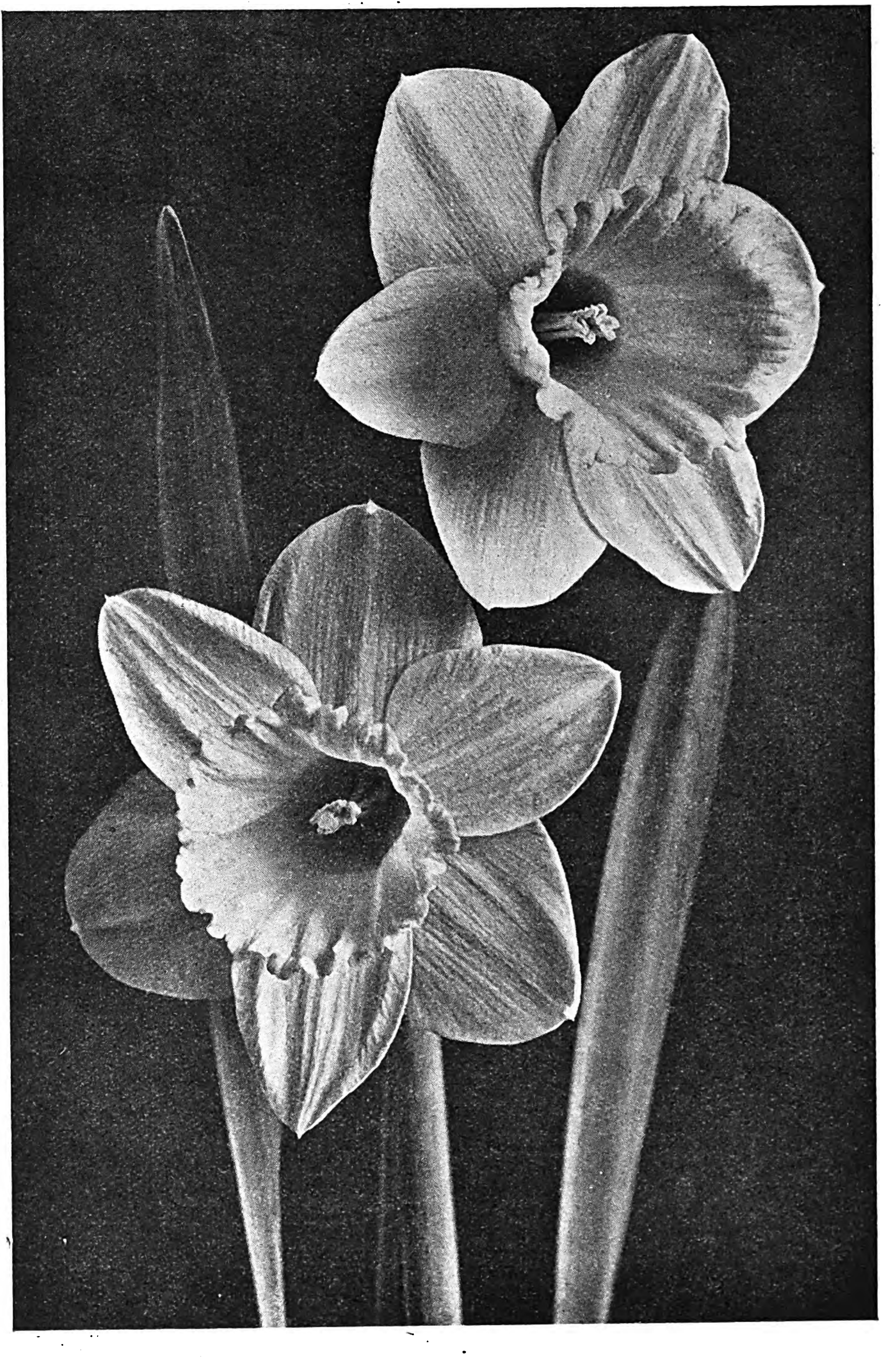


FIG. 154.—NARCISSUS GOLDEN INGOT.

R.H.S. Award of Merit, April 9. Flowers golden-yellow and primrose.

Shown by Mr. J. L. Richardson (see p. 285).

Publications Received.—*Your Flower Garden*, by Alfred E. Livingston; pp. 208, illustrated; Messrs. Crosby Lockwood and Son, Stationers' Hall Court, E.C.4; price 5s. net.—*American Rock Gardens*, by Stephen Hamblin; pp. 125, illustrated; *Garden Lilies*, by Isabella Preston; pp. 126, illustrated; The Orange Judd Publishing Co., New York, U.S.A.; price $1·25 each.—*Horticulture, Elementary and Practical*, by George W. Hood, M.Sc.; pp. 382, illustrated; Messrs. Henry Kimpton, 263, High Holborn, W.C.; price 15s. net.—*La Bizzarria*, by Professor Pietro Nati; reprinted, with Italian translation, by Dr. A. Ragionieri, Castello, Italy; price L.8.—*Daffodil Growing for Pleasure and Profit*, by Albert F. Calvert, F.C.S.; pp. 412, with 236 full-page plates; Messrs. Dulau and Co., 32, Old Bond Street, W.1.; price 21s. net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN-MOORE, Manchester.

Aerides, Saccolabiums, Vandas, etc.—Many species in these groups of lovely Orchids thrive under similar cultural conditions. Specimens that are now showing signs of activity should be given fresh rooting material, consisting of Osmunda fibre and fresh Sphagnum-moss. Strong-growing kinds—Vanda tricolor, Aerides Lawrenceana, Saccolabium giganteum, Rhyncostylis retusa, etc.—may be grown in pots, while smaller-growing species, such as Aerides maculosum and Saccolabium ampullaceum, are best accommodated in baskets or pans suspended near the roof-glass. Healthy plants that have retained their lower leaves well should have the old soil removed, and decayed roots cut away without disturbing the sound ones. See that the drainage is good, and work in fresh fibre and moss around the roots, adding lumps of charcoal as the work proceeds, and using a little extra moss for the surface. Plants that have lost their lower leaves should be turned out of their receptacles, and should have the lower portion of the stem removed to a point immediately below some good new roots, with a view to bringing the leaves down to the top of the receptacle. Arrange the plants and roots in position, then half-fill the pot with broken crocks and charcoal, carefully bending the roots in, after which fill in with compost, inserting charcoal as the work proceeds, and making it firm. Sufficient water should be given to moisten the compost through, after which very little will be required until the plants and roots are growing freely, when larger quantities will be required. They should be grown in a warm house. The surroundings and pots should be sprayed frequently in favourable weather; a humid and buoyant atmosphere should be maintained, and the plants will require shading from bright sunshine. Do not allow moisture to condense on the roof-glass during cold spells as the drips quickly damage the plants beneath. Vanda tricolor and V. suavis grow very fast and flower spikes soon develop; when this stage is reached extra water should be given to the roots. Vanda teres, V. Hookeriana, and the lovely hybrid Miss Joaquin, which have been kept dry at the roots during winter, should now be transferred to the lightest and warmest position in the warm house, where they may be syringed with tepid water several times daily during their growing season. These Vandas enjoy full sunshine, but as the flower spikes develop and expand, a little shade should be given to prevent the beautifully coloured flowers fading quickly. The stems should be fastened to teakwood stakes, and plenty of fresh Sphagnum-moss should be used about the roots. Vanda coerulea is now growing freely in a light, airy position in the intermediate house, and only requires shading from very bright sunshine. Plenty of fresh air should be afforded it on all favourable occasions, especially during warm nights. V. Kimballiana, V. Watsoniana and V. Amesiana also thrive under these conditions, especially as the weather becomes more genial, and the syringe may be used more frequently among them.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Chief Assistant Lecturer, Reading University Horticultural College.

Apple Scab.—Apple scab or black spot is one of the most serious diseases with which the fruit grower has to contend, and its control, particularly in the case of dessert Apples, is of the utmost importance. Even when only slightly affected, the Apples are generally stunted in size and are quite unfit for table use. This disease attacks the shoots, the leaves and the fruits. During the dormant season it may be seen on the one-year-old shoots as brown, corky scabs, particularly on the varieties Potts's Seedling, Cox's Orange Pippin, Bismarck, and Dumelow's Seedling. From these shoots the fresh leaves are infected, and from the leaves the infection spreads to the fruits. The most favourable conditions for the spread of this disease in spring are cool and damp weather. Rain is essential before any movement of the spores can take place, but a period of only six or eight hours is considered sufficient. On the leaves the fungus appears as dark-coloured spots, mainly on the upper surfaces. The skin is eventually ruptured, and this results in the setting free of the spores, which infect the fruits. Apple scab may be controlled only by cutting out scab-infected shoots and by preventive measures of a fungicidal nature. The object of such treatment is to prevent the establishment of the fungus on the leaves. The best time to apply fungicides is when the trees are in the "pink bud" stage. This may be found impracticable in a private garden where a great many sorts are grown, therefore spraying when the earliest varieties are in the "advanced pink" stage should be practised. There should be a second application when the last of the petals are falling; and a third two or three weeks later if practicable. Fruit growers are not quite agreed as to the fungicide most suitable to apply at the "pink bud" stage. Some favour a Bordeaux mixture (6 lb. copper sulphate and 8 lb. quick lime to one hundred gallons of water); others a lime-sulphur spray (one part in forty of water). With the application of either there may be slight leaf-scorch, but that is dependent, to some extent, on the amount of sunshine immediately following spraying. It is important, where practicable, to apply the spray at a high pressure, through a nozzle which will give a fine, misty spray, just sufficient to cover the leaves, but without drenching. The second spray should be with lime-sulphur (one part in eighty of water) with 4 lb. of arsenate of lead added to each one hundred gallons of diluted spray to keep caterpillars in check and in the hope that it will also control Apple sawfly and codling moth larvae. The third spraying should be with lime-sulphur only. With Cox's Orange Pippin, the second spray should be reduced to one in one hundred, owing to the risk of spray injury to the foliage. When mixing a combined lime-sulphur and arsenate spray, it is important to dilute the lime-sulphur solution before adding the arsenate, and not the other way about, or chemical action is set up. The mixture should be used immediately. These fungicidal sprays are cumulative in their effect; and where the disease has been severe for some years the beneficial effect of the sprays may be more apparent in the second year, than in the first.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Planting Water Gardens.—Those who are fortunate enough to possess a stream or pond will find the adorning of it one of the most fascinating forms of gardening, for a great many of our most beautiful hardy plants are very effective when grouped by the margins of ponds or streams, and it is a matter of surprise that full advantage is not taken of them. When planting the banks of a pond the ground which projects out in irregular points should be chosen for the boldest plants, so as to produce a natural effect, and also to give the appearance of a larger stretch of water. Among foliage plants suitable for furnishing the margins of ponds, one naturally thinks of Gunnera manicata. This is one of the noblest plants for such a position; being a gross feeder, it is worth while to give the site for it extra preparation before planting, and an annual mulch to ensure that the leaves attain their full dimensions. Gunnera scabra, although small in comparison to the former, is also worth a place, while a colony of the dwarf Gunnera magellanica will prove an effective contrast to the large-leaved species. Rheums are also well worth places where plants with large leaves are required, and these, like the Gunneras, flourish in deep, rich soil. Among the best species are R. Emodii and R. nobile. Plants with more graceful foliage suitable for waterside planting are the various Gyneriums, and Cortaderia conspicua; the latter flowers much earlier than Pampas Grass, and for this reason will be found valuable in late districts. The Royal Fern, Osmunda regalis, may also be employed with effect.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Early Pot Vines.—These will have passed the stoning stage and, if all has gone well, the fruits should be approaching the ripening period. The roots should never lack moisture; the wall and floors should be damped regularly, and a free circulation of warm air, by fire heat, should be maintained throughout the colouring process. If the vines are heavily cropped and it is doubted whether the Grapes will colour well, a little extra air, more time, and a gradual lowering of the night temperature, supplemented by the use of soot-water and clear liquid manure at a temperature of 85°, will assist them greatly.

Figs.—The earliest pot Figs will soon exhibit a disposition to grow, which shows that fertilisation is completed, and the Figs will soon be mature. Less syringing, and a drier atmosphere, will therefore be necessary to obtain high flavour and good finish. Let the temperature during mild weather be 75° to 80°, and 90° after closing in the afternoon, gradually falling to 65° by the morning. Apply warm, diluted liquid manure frequently and syringe twice daily during bright weather to keep the trees clean, until the fruits show signs of ripening. Successional Fig houses may be kept at a temperature of from 55° to 60° at night, and 10° higher by day with sun-heat, until the trees have passed the flowering stage. Plants in later houses may now be assisted with a little fire-heat. If this is not practicable, close the house early in the afternoon, so as to secure so much sun-heat as possible, and syringe the plants on the mornings of fine days only.

Cucumbers.—Stop the shoots of vigorous plants, but where the plants have been in bearing some time, or have been overcropped, allow a little more freedom. Keep the temperature at 70° to 75°, with bottom heat at 85°, where plants have to be retained in houses. Fill up vacant frames as required, and cover up the frames at nights with mats until the end of next month. Plants in frames do not require so much water or feeding at this early season as those grown in pits or houses.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Gesneras.—The tubers of these plants which have been dried off should by now be thoroughly ripened. They may be turned out of the pots forthwith—a little care is necessary, otherwise the tubers may break—and repotted. The compost should be light and open, and may consist of equal parts of peat, fibrous loam and leaf-mould with plenty of sharp sand added; the receptacles should be well drained. As a rule, four or five of the strongest tubers may be placed in a six-inch pot, while the weaker-growing sorts may be grown in smaller receptacles. If started into growth in the receptacles in which they are to flower, some care is needed with regard to watering, otherwise the soil will have become soured before the roots are active. An alternative plan is to start the tubers by placing them thinly in shallow boxes or pans in a light compost, and when they are about two or three inches high, transfer them carefully to their flowering pots. Cover the tubers lightly and place them low enough in the pots to allow of top-dressing at a later date. Very little water is necessary during the early stages of growth, but a moist atmosphere is essential, also shade from bright sunshine in the early stages.

Malmaison Carnations.—One-year-old plants of the old Souvenir de la Malmaison Carnation will by this date have filled their receptacles with roots, and may now be assisted with some approved Carnation manure. Weak stimulants are to be recommended, and are best applied in liquid form; soot-water is also beneficial. This Carnation resents over-feeding, and if it is practised, the flower will, in all probability, show coarse centres; but when the plants are fed judiciously the flowers will show a marked improvement in quality. Aphides are very partial to these plants, which should be kept in check by occasional fumigations. Warmth from the hot-water pipes may be dispensed with, except on very cold nights.

Richardias.—As these plants pass out of flower and space is needed for other plants, they may be transferred to cool pits. Less water may be given at the roots, when the foliage will gradually die down until the plants come finally to rest.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunstar, Somerset.

Turnips.—Hoe between the rows of Turnips that were sown a few weeks ago, and when the seedlings are large enough to handle, thin them to from six to eight inches apart. A light dressing of soot hoed in between the lines after thinning will be beneficial in inducing quick growth. Another sowing may be made of the variety Early Snowball to provide a succession.

Potatos.—Maincrop Potatos should be planted without delay. Wood-ashes may be scattered in the drills after the tubers have been inserted, as the potash so afforded will be beneficial to the crop.

Peas.—A further sowing of mid-season Peas may be made for successional purposes, according to the requirements of the establishment.

Beetroot.—Long-rooted Beet may now be sown in ground that has been well tilled. The seeds may be sown in drills, or the ground may be made fairly firm and the seeds sown in holes bored with a crowbar and filled with sifted soil if long, specimen roots are desired.

Radishes.—These may be sown out-of-doors at intervals of five to six days, taking care not to sow the seeds too thickly. Mustard and Cress may also be sown in the open, in ground which may be kept moist.

Hoeing.—As the seedlings of the various vegetable crops come through the ground, no time should be lost in stirring the soil between the rows with the Dutch hoe. Onions, Carrots, Beet, Parsnips, Parsley, Peas, Turnips, etc, will benefit greatly by having the soil loosened about them, and this treatment will also keep weeds in check. Hoeing should be done regularly, at weekly intervals.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemont, Monkton, Ayrshire.

Globe Artichokes.—The past winter took heavy toll of these, even when protected, therefore, if young plants have been saved in frames, they should be planted out now in well prepared ground. Some of the old plants may yet break away, but few will be strong enough to yield heads this year.

Cutting Evergreens.—Yew and Holly hedges may now be clipped unless in very exposed places. Box edgings may also be clipped at an early date, where necessary, but where spaces occur it is better to replant the whole. The present time is ideal for this latter work, as growth is just starting. A little leaf-mould put in the trench and worked in among the roots will be advantageous, and if the soil is very wet or heavy, sand may also be added. Most evergreens transplant well at this season, and if the work is done carefully, not a plant should be lost. If large specimens, which have not been disturbed for years, have to be moved, it is advisable to sever the roots on one side the year previous to removal, to reduce the danger of the tree receiving too great a check. In warm, dry weather, copious waterings at the roots and overhead syringings assist greatly to re-establish the specimens.

Vegetable Marrows.—A few seeds of these should now be sown in heat and the seedlings potted up when they make the first rough leaf. Nothing is gained by sowing early, as the seedlings cannot be planted out before June, unless under lights, and stunted plants never do well. There are many varieties, but for general use Long White is most in demand.

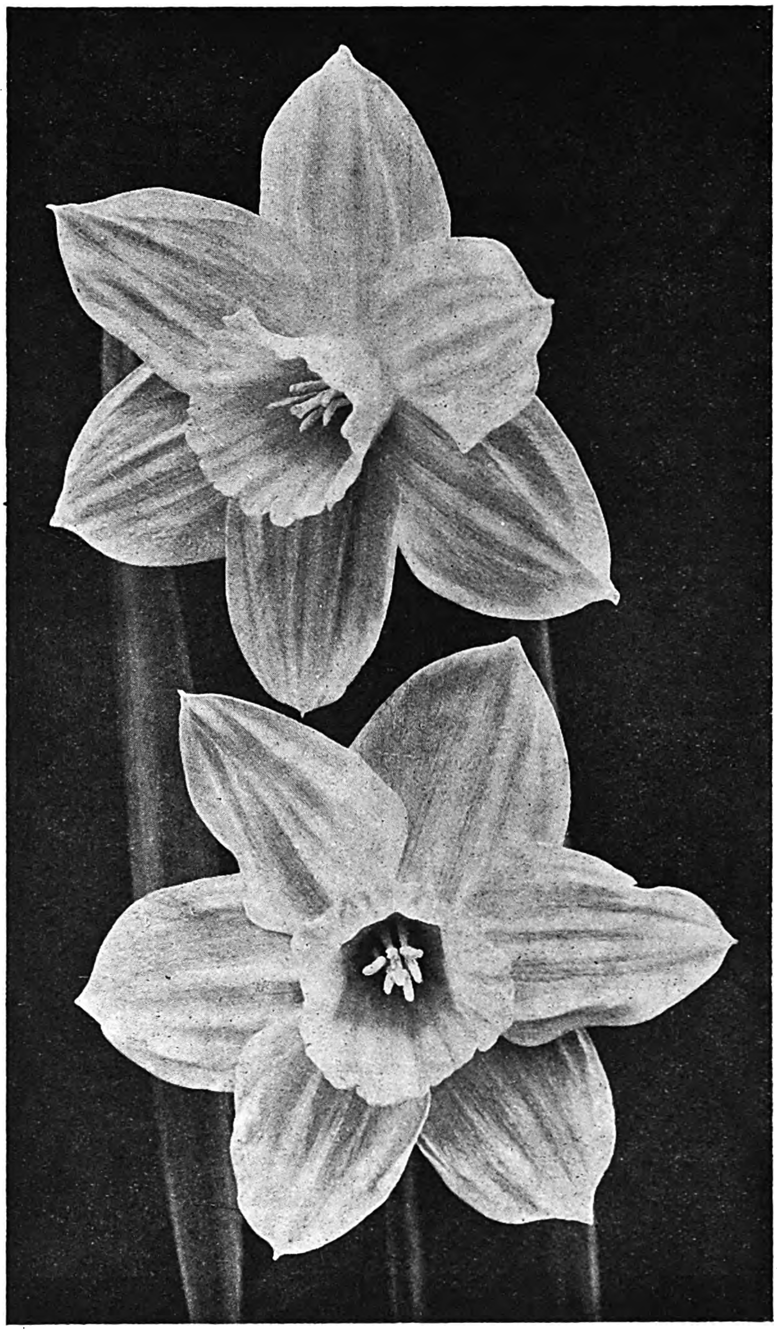


FIG. 155.—NARCISSUS SOLLERET.

R.H.S. Award of Merit, April 16. A Jonquilla hybrid; flowers rich golden-yellow. Shown by W. B. Cranfield, Esq., East Lodge, Enfield Chase (see p. 300).

Herbaceous Plants.—As the herbaceous plants develop growths the shoots should be thinned severely, all weak or crowded growths being pulled away, to allow the remainder room for full development. Phloxes, Heleniums, and, in fact, nearly all the occupants of the herbaceous border, will benefit by this treatment. Asters should be lifted and broken up, only the strong, young shoots from the outside being retained and planted singly. If cuttings of new or rare Michaelmas Daisies are inserted now in heat and planted out in May or June, with generous treatment they should make a fine show, much earlier than old plants, and if not planted too thickly, they do not grow so tall as usual, which is all to the good.

Cyclamens.—As the Cyclamens pass out of flower, water should be withheld gradually until the corms are completely ripe; the pots may be stood on a warm shelf or in a frame, fully exposed to the sun, until starting time arrives. Young plants should be encouraged by overhead sprayings and shade from bright sunshine. Do not allow them to suffer through lack of pot room, and stand them on a cool ash-bed, in a temperature of 60° to 65° as a maximum, falling to 55° at night.

Lawns.—After thoroughly sweeping the lawn, it should be rolled when the ground is moist until growth is sufficiently advanced to require cutting. A light dressing of sulphate of ammonia should be given unless a properly balanced lawn manure has already been applied.

PLANTS NEW OR NOTEWORTHY.

RHODODENDRON LEUCASPIS.

The interesting and attractive dwarf Rhododendron referred to in *The Gardeners' Chronicle* of February 16, 1929, page 128, as Rhododendron K.W. 6273, and figured in the issue of February 23, page 135, Fig. 69, proves to be a new species closely akin to certain members of the 'Boothii' series. In that series the flowers are usually yellow, but in this new species, to which the name "leucaspis" is given, the flower is almost a pure white—the flower colour and the flat face of the rotate corolla has suggested the specific name, "white shield." The plant was raised from seed collected by Captain F. Kingdon Ward, in the Upper Brahmaputra valley. The exact details of the locality from Captain F. Kingdon Ward's field note are given with the following diagnosis:—

R. leucaspis, Tagg, sp. nov.

Species sectionis Boothii ex affinitate R. megerati, Balf. f. et Forrest et R. sulfurei, Franch. a quibus floribus majoribus binis albis inter alia signa differt.

Fruticulus ramosus circ. 60 cm. altus, nunc paulo prostratus, nunc erectus; ramuli virides paulo setosi, (sub inflorescentia) circ. 3 mm. diametro. Folia petiolo 5–7 mm. longo vix sulcato flaccide setoso lepidoto suffulta; lamina ovalis vel elliptica vel paulo obovata, 3–5 cm. longa, 1·5–2·5 cm. lata, apice rotundata, basi obtusa vel late cuneata, margine setis crispatis praedita, supra atroviridis nitens sparsim pilosa atque lepidota, infra glauca papillata atque squamis flavidis conspersa, costa supra leviter sulcata infra eminente sparsim lepidota atque crispato-pilosa, venis primariis utrinque 6–8. Inflorescentia 1–3-flora, plerumque 2-flora; rachis tantum 3–4 mm. longa; pedicelli ad 1 cm. longi, bracteis plus minusve persistentibus semicelati, dense lepidoti. Calyx conspicuus, circ. 7 mm. longus in lobos 5 late ovatos vel obovatos virides vel roseo-tinctos basi lepidotos longe ciliatos fere ad basim fissus. Corolla rotata, clare alba, circ. 5 cm. diametro. extra lepidota, intus ad faucem pilosa; tubus 6-10 mm. longus, obscure 5-costatus, in limbum planum abrupte expansus; lobi late rotundati, basi auriculati, 1·5 cm. longi, 2·5 cm. lati, leviter emarginati. Stamina 10, subaequalia, 1·6–2·4 cm. longa, filamentis albis per partes tres inferiores villosulis, antheris 4 mm. longis. Gynaeceum 1·7–2 cm. longum; ovarium 4 mm. longum conicum squamis albidis dense lepidotum; stylus validus decurvus glaber vel basi sparsim lepidotus, stigmate late expanso.

Tibet: Tsangpo Gorge, at 10,000 feet. F. K. Ward, No. 6,273, in cult.

Captain Ward's field note of this number reads as follows:—

"Musi La, below Gyala, Tsangpo Gorge, 10,000 feet. 17-11-24. Bushy undershrub, sometimes more or less prostrate with ascending branches, or erect, 1-2 ft. high. Amongst Bamboo and other Rhododendrons on steep, grassy slopes, or on cliffs. Allied to numbers 6,250, 6,291." K. Ward No. 6,273.

As indicated by the collector, two other numbers are closely akin. The field notes for these are as follow:—

"Pemako, 8-9,000 feet. 24-10-24.

Epiphytic, hanging in long, loose festoons from the mossy trunks of big trees (Abies, Rhododendrons and Grande, etc.) in the middle forest. Petiole, pedicel and leaf margin with long, bristly hairs; under-leaf surface with scattered golden scales; ovary with scattered pale yellow scales. Truss 1–3 flowered. Calyx large, leafy, almost enclosing the ovoid capsule. Style (now) bent at right angles to the ovary. Fairly abundant." K. Ward, No. 6,250.

"Tsangpo Gorge, 8,000 feet. 20-11-24. Small, bushy or straggling undershrub of 1–3 feet, with long loose branches. Epiphytic on big, moss-clad trees in the middle forest with other epiphytic species. Allied to numbers 6,250, 6,273." K. Ward, No. 6,291.

Habit.—A bushy undershrub of 1–2 feet (the plant in cultivation constituting the type is a somewhat prostrate shrub of about one foot). Young shoots greenish, softly bristly; older wood brownish or reddish-brown.

Leaves.—Petiolate. Petiole 5–7 mm. long, not conspicuously grooved, softly bristly and lepidote. Lamina oval, elliptic, ovate or obovate, 3–5 cm. long, 1·5–2·5 cm. broad; apex rounded with a reflexed tuberculate mucro; base obtuse to broadly cuneate or semi-rounded, margin recurved, ciliate with long, crisped hairs; upper surface dark green, glossy, sparsely clad with long, thin, crisped hairs and also lepidote, both scales and hairs somewhat deciduous on old leaves; under surface greenish-grey, glaucous, papillate with wax-covered papillae, lepidote with yellowish, glistening scales which are a little more than their own diameter apart, midrib slightly grooved above, yellowish, prominent below and sparsely lepidote and very sparsely hairy with long, crisp hairs, primary veins about 6–8 on each side, very slightly impressed above, slightly raised below.

Inflorescence.—1–3 flowered (commonly 2-flowered); rhachis short, 3–4 mm. long; flower stalks encased in the more or less persistent bud scales, the outer of which are oval, pinkish, lepidote, with the margins densely fringed with short, soft, white hairs.

Pedicels.—Short, stout, not exceeding 1 cm. long, slightly curved below the calyx, densely lepidote.

Calyx.—Large, 6–8 mm. long, split to near the base into 5 broadly ovate, or obovate lobes; lobes greenish or pink-tinted, lepidote at the base, elepidote over upper two-thirds of length, fringed with long, curly, soft hairs.

Corolla.—Rotate, pure white, about 5 cm. across, lepidote outside, hairy within at the throat; tube 6–10 mm. long, 5-ridged, limb almost flat; lobes 5, broadly rounded, auricled at base and there overlapping, about 1·5 cm. long, 2·5 cm. broad, more or less emarginate.

Stamens.—10, sub-equal, 1·6–2·4 cm. long; filaments white, stout, hairy over the lower three-quarters of their length; anthers 4 mm. long, dark chestnut-brown.

Pistil.—1·7–2 cm. long; ovary 4 mm. long, cone-shaped, densely lepidote with whitish scales; style stout, curved downwards, whitish to pale green, glabrous, or with a few scales at the extreme base, expanded at the tip into a broad, 5-lobed, discoid stigma, 3 mm. across, with a central depression.

R. leucaspis promises to be of distinct horticultural value. It apparently flowers when quite young and very early in the year. Captain F. Kingdon Ward collected the seeds in November, 1924, and plants raised from these seeds have flowered in February and March as early as 1928. It is, perhaps, too soon to state anything about its hardiness.

In flower structure and foliage characters it seems to be very nearly akin to such members of the Boothii series as R. megeratum, although the majority of the members of that series have yellow flowers. The rotate corolla, the few-flowered truss, the distinctly down-curved style, the large calyx, are all in keeping with the R. megeratum group of the Boothii series; moreover, the leaf form, the ciliate margin, the scales of the leaf under-surface, and the leaf anatomy, suggest affinity with R. sulfureum and R. megeratum. As in the majority of the members of the Boothii series, the under epidermis of the leaf is distinctly papillate, with wax-covered papillae, which give the glaucous-grey colour, and the scales are sunk in small pits in the epidermis. The time of flowering, the small, elliptic leaves, glossy above and grey-green below, suggest, at first, relationship with R. moupinense, but the likeness is more superficial that phyletic. R. moupinense has a long, straight style and a funnel-shaped corolla. A nearer flower-structure affinity is with R. pendulum which, however, is quite different in foliage. Another series of the genus, the members of which have somewhat flat, rotate corollas, and sharply-curved styles, is the series Camelliaeflorum, but here again the foliage is unlike that of R. leucaspis. *H. F. Tagg, Edinburgh.*

TREES AND SHRUBS.

SPIRAEA BULLATA.

This rotund, dwarf shrub gives almost the appearance of having been clipped into shape, so tight are its dense masses of fastigiate growths, one foot high, clothed in dark green, crinkled leaves, which are broadly ovate and irregularly dentate. The small, flat corymbs of pink blooms are produced in lavish profusion toward the end of June, and they are borne at the ends of the current season's growths throughout July.

S. bullata is not very particular with regard to soil, but flowers most profusely in a sunny position. A little judicious pruning and thinning proves beneficial in spring, when growths taken from the base of the plant may often be induced to make roots of their own, if they do not already possess them.

This shrub is a native of Japan and is possibly a dwarf form of S. japonica. It has been cultivated since 1881, and is known also by the name S. crispifolia. Although not cultivated extensively at present, S. bullata is one of the best deciduous-flowering shrubs for the rock garden or the front of the shrub border. *Graham S. Thomas, Botanic Garden, Cambridge.*

CORYLUS COLURNA.

Apart from the purple-leaved forms of Corylus Avellana and C. maxima, one does not, as a rule, associate the Hazels with ornamental plants in the garden, although the common Hazel is one of the most attractive features of our native landscape, where, however, it is not brought into competition with plants culled from floras much richer than our own. Here, it fits into the economy of things, and its beauty no man will deny. Pleasing to the eye in spring when festooned with countless catkins, and in the autumn something to satisfy the most epicurean taste. Nightingales, too, consider a Hazel copse a fitting theatre in which to pour forth their inimitable song, and what more could any plant desire!

These thoughts were created by the sight of a very imposing specimen of Corylus Colurna in flower. This species will hold its own with any of the denizens of the garden. It has all the qualities of a first-rate plant, and on account of its stately habit, commends itself as a specimen tree. The typical mode of growth is a short, stout trunk from which arise a series of lofty branches, reaching a height of thirty-five feet to forty feet or more, giving the plant a fine pyramidal outline. The bark is a pale greyish-brown colour, and peels off in irregular patches.

C. Colurna is remarkable for the length and profusion of the male catkins, which are borne in clusters of three to five, and are often six inches long. The colour, a greenish-yellow, will not improve on close inspection, but to be thoroughly appreciated the plant must be viewed from a short distance. The effect of the myriad of long, graceful, drooping catkins is at once striking, combining a light and airy daintiness with the dignity of a stately tree. A specimen caught in the rays of the sun on a bright spring morning is an object of scintillating beauty. The female catkins are, of course, insignificant, but are attractive on account of their protruding crimson styles. The nuts are partially enclosed in a remarkably large and curiously-fringed involucre. The leaves are four to six inches long, two to four inches wide, heart-shaped at the base, and have irregularly toothed margins.

C. Colurna is widely distributed, occurring in south-east Europe, Asia Minor and the Himalayas. As it survives the cold winters and extremely hot summers obtaining in these regions, it is quite amenable to our climatic conditions. It is stated to have been introduced into this country about the seventeenth century, but has suffered neglect, and deserves much more attention. It should be given consideration for a position where a good deciduous specimen tree is required. The Himalayan form of C. Colurna is sometimes described under the name C. Jacquemontii. *Thos. Blythe, Botanic Garden, Cambridge.*

HARDY FLOWER BORDER.

POTERIUM OBTUSUM.

This beautiful Japanese Burnet has not been so long in cultivation as to have become common, although it has already achieved distinction as a valuable herbaceous border plant, attractive both in foliage and blossom.

For P. obtusum is hardy and a vigorous grower, forming a basal mound of foliage from which arise, during July, branching stems to a height of three feet or more, terminated by slender, gracefully arching flower spikes of rosy-crimson, light and airy in appearance owing to the long, coloured stamens, which constitute the charm of the inflorescence. P. obtusum should be planted in cool, deeply-worked and moderately rich soil, and may be increased by division.

Another desirable member of this Rosaceous family is P. canadense, which attains a height of four or five feet, and has highly ornamental, glaucous-green foliage, and long, fluffy, creamy-white inflorescences, produced profusely during autumn, and useful for cutting. P. canadense is seen at its best when massed on the margin of a pond or lake, in cool, deep soil.

P. tenuifolium, also with whitish inflorescences, is sometimes grown, also P. sitchense, which rarely exceeds more than two feet in height when producing its purplish inflorescences, and, like P. canadense, is best suited to moist positions; although P. canadense does not object to a position at the back of the herbaceous border, where it may be grown with effect.

Our native Salad Burnet—P. Sanguisorba—although with no pretentions of handsome appearance, is yet not without charm when naturalised in the wild portions of the garden, in warm, dry situations, or in sunny grassland, to which its flower heads of green and purple will impart an attractive, misty appearance. *M. W.*

ALPINE GARDEN.

ALLOSORUS CRISPUS.

There are now so many rock plants grown in our gardens, hailing from the four corners of the globe, that we are apt to neglect some of those which grow nearer home. Bright colours are essential to any garden, but too often one misses the little shady alpine glen with tinkling brook or silent pool, and devoted mainly to a collection of plants other than those which bear flowers. For such a position, Ferns are admirably suited, and they form a beautiful foil for the Candelabra Primulas and other plants requiring a moist situation and a certain amount of shade.

Year by year the list of small Ferns continues to lengthen, and now there are many varieties, forms, and sub-forms of desirable species which are both useful and beautiful, despite their frequently cumbersome botanical names. Nevertheless, there are several species which are deserving of attention without recourse to varietal forms, and of these the Parsley Fern stands predominant, partly on account of its curious leafage, and also because it is a plant which, while it naturally resents a dry position and full sun, is less insistent upon shade and moisture than many other species.

Allosorus crispus (Cryptogramme crispa of Robert Brown) grows wild over a large area of the northern hemisphere and, except in the extreme north, inhabits mountainous districts. It is a native of Britain, being found in several localities, but chiefly in Scotland and in the northern counties. The stock is tufted, and the light green foliage is not unlike that of Parsley, especially the outer fronds, which are barren. The central fruiting fronds are taller than the barren ones, but the whole plant rarely exceeds twelve inches in stature in the most favourable circumstances.

Those attempting to grow this Fern should imitate the natural conditions under which the plant is found. It should be accorded a cool position, preferably facing north, at the base of a large boulder, provided the drainage is good. The soil may be a fairly spongy mixture of loam, leaf-mould and peat, but its texture would have to be governed by the position available. Although the plant fully enjoys moisture when growing rapidly in summer, it must have fairly sharp drainage. For this reason, and for the fact that it naturally inhabits rocky situations, small pieces of rock should be buried in the soil and scattered around the plant, in much the same way as one would treat Daphne Blagayana. It would be interesting to try A. crispus in a rock-cleft, into which water drains from moist ground above; if the rocks are well placed the passage of water would keep the cleft uniformly moist, without becoming stagnant at any season.

The late Mr. Malby grew this species in the moraine, but it is quite possible that he found the plant throve equally well in other situations which would provide a more natural setting. For instance, if the intending cultivator of A. crispus has a rocky bank in a woodland dell, where the trees afford partial shade, he would do well to try it in this position. The proximity of rock of a porous and yet absorbent nature is an additional advantage, and the writer has seen specimens growing quite well in partly-shaded pockets among half-buried sandstone blocks and rubble, the soil being of a peaty nature and the slope gradual. *L. B. C.*

WOODLAND GARDEN.

VIOLA CANADENSIS.

This robust and decorative Violet is a native of Canada and the United States, ranging in the former country from Newfoundland and Quebec to British Columbia, and ascends the Rocky Mountains to a considerable elevation above sea-level. The finest specimens both with regard to stature and size of flowers, are usually found in deciduous woodlands, luxuriating in the deep leaf-soil, beneath or in the shade of Maples and other trees. In mountainous situations it is usually dwarf and compact.

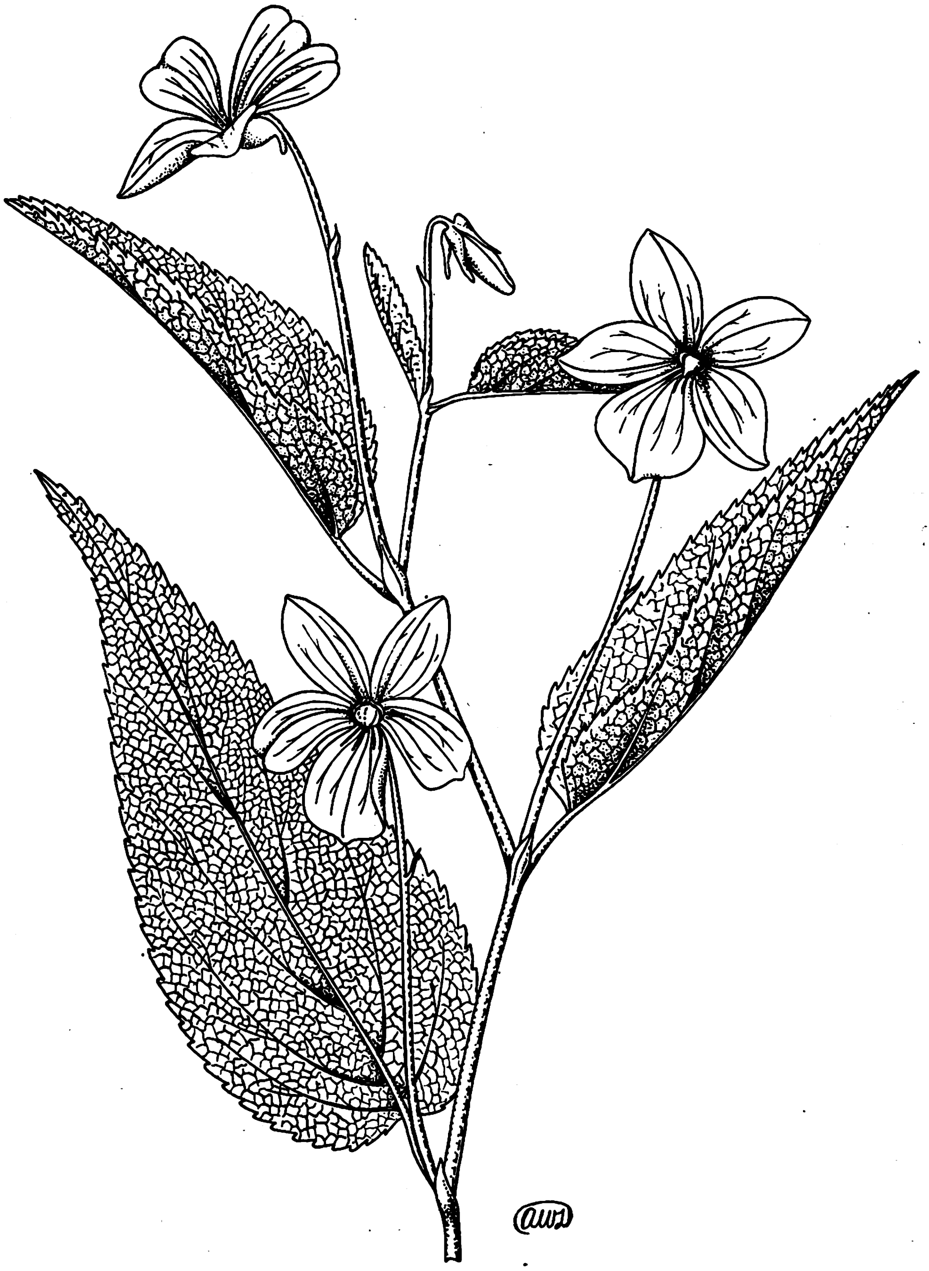


FIG. 156.—VIOLA CANADENSIS.

Viola canadensis (Fig. 156) produces a clump of rich green, strongly-veined, smooth foliage on more or less erect stems, six to twenty-four inches tall, bearing numerous beautiful blossoms on long, slender stems which spring from the axils of the leaves; they vary from white tinged and veined with purple, to pale mauve tinged with pink; the spur in this species is remarkably short. The plant blossoms from April to June, and may be grown easily in a damp, half-shady spot in leaf-soil and loam. *A. W. D.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XIX.—MARKING TIME.

APRIL 26 saw us on the move again, still heading up the valley, east of north. It was alleged to be two marches to where the Delei river splits in half, at Watersmeet, as we named it, and, owing to unforeseen causes, we actually took a day and a bit; but it was not really more than a decent day's march, along an easy path. Ever since leaving Chibaon we had kept high above the river, and we still did so. From one spur we had a fine view up the valley of terrifically steep, igneous ranges, barren and repulsive, enclosing the furious river. I quite expected that we were coming to a Pine-clad country; but although the bare framework of the mountains often showed through the thin covering of grass and trees, the latter were always Oak and Alder; and higher up, where the clouds clung persistently, was the usual forest.

At the end of the first day we camped at a village whence we could see many snow-covered peaks, now much closer; but with the mountains as steep as houses, and the valleys as deep as trenches, there seemed little prospect of the country opening out, or the forest changing its spots. However, next day we passed through a lot of cultivation and saw not only large patches of Opium Poppy, carefully fenced in, but Wheat and Barley. That, at least, indicated a change for the better, and I had hopes of a Tibetan settlement ahead, where more gentle slopes seemed to suggest pastures, if not new methods of tillage. Two hours' march brought us to Tablekon, above Watersmeet, where we found grass huts of low degree ready for us, pitched in the midst of cultivation and surrounded at a distance by the same old Mishmi huts. The altitude was about 5,250 feet. We had a clear view up the north-west branch of the Delei river, and it did not look encouraging; the view up the north-east branch, at the head of which was supposed to be the pass, was blocked by a high spur. Above the cultivated slopes was the forest, with Tsuga trees nearer than we had seen them yet, and although the snow-bound peaks on both sides of the river were also much closer, they looked, if possible, more inaccessible than ever. However, after two months of effort, we believed ourselves to be at last within striking distance of the pass. Disillusionment followed swiftly.

The day was wonderfully fine, but the atmosphere was rather milky, and in the middle of the day a more than usually fierce gale raged for two hours. That prepared the way for bad weather, and for the next six days it rained steadily, with brief intervals, although the rain did not prevent us going out and taking a look round.

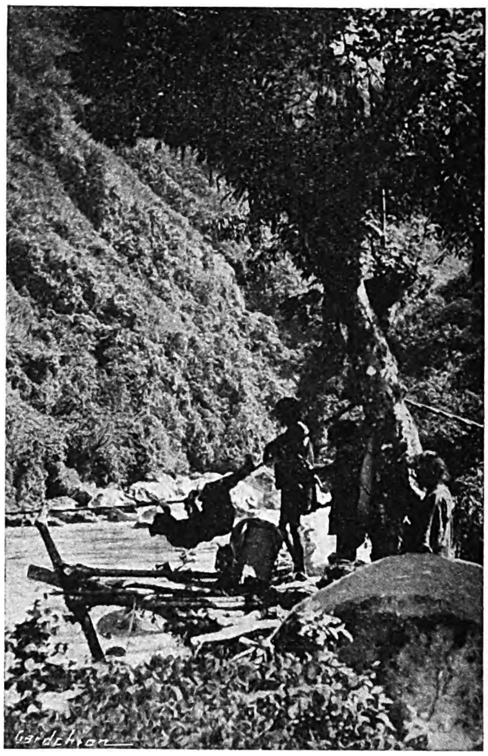

FIG. 157.—CROSSING THE DELEI RIVER BY A MISHMI ROPE BRIDGE.

On our first excursion to a nearby glen, where a fine cascade crashed over a cliff, we got covered with leeches. A pale violet-bearded Iris grew on the cliff under the drifting spray and just out of reach; a few plants found on the stony bank below might have been washed down from above, and did not flower. Within reach, on the drenched cliff, was a common-looking 'Diptera' Saxifrage, and another bright yellow, fleshy Saxifrage. By the stream, I noticed Veronica, Violets, Buttercups, Cardamine, a small Mimulus, Impatiens and a Myosotis with minute flowers. The Violet was worth more than passing notice. It was a good-sized plant, producing long runners, and flowers on stalks two or three inches high, at least, in fruit. The flowers were white, expanded, like the wings of a butterfly, the base of the spur alone being dark violet. In fact, the flower looked like nothing so much as a small, white butterfly with a violet body, in full flight. The plant is quite glabrous, and the leaf-margin is crenate. Another somewhat similar species is found here, but it can be distinguished from the above by the fact that it is slightly scabrid all over; the leaf, too, is drawn out into an acuminate apex, and the margin is serrate instead of crenate. It is not so common as the first mentioned species.

Another day I visited some cliffs up the side stream. Every stream now, big or little, was walled in by sheer gneiss cliffs, generally bare, and every tertiary stream dropped over a precipice which might be anything from 500 feet to 1,000 feet high. In flower were Campanula colorata, Didissandra lanuginosa, Arisaema, Cynoglossum, and Geranium; not in flower were species of Begonia, Chirita and Orchids. On May 3, we crossed the next stream and climbed the shoulder above, from which we hoped to get a clear view, if not of the pass, at least up the valley. However, once more we were disappointed. The river carved its way in a semi-circle through a deep, dark gorge, and the view was quickly shut out by immense spurs; far from broadening out, the valley grew ever narrower. Thus it became evident that the head of the valley was not, as I had supposed, ice worn, and that the Delei river was simply a flank stream which, rising on the southern face of a great range, had carved a narrow valley, for itself—a gorge rather. We had walked into a hopeless cul-de-sac!

The path around the arc of rock which formed one wall of the gorge was a succession of breakneck climbs up and down notched logs; the face, being partly in shadow, and well watered from above, was covered with a thick growth of shrubs, some of which were flowering gaily; Philadelphus, a pink Deutzia, Euonymus, the 'Aureum' Rhododendron; either already over, or not yet in flower, were Rhododendron dendricola, Corylopsis himalayana, Abelia, Ilex, Quercus, Hydrangea, Skimmia and so forth. Until the rain ceased, we could not hope to do another march, as the coolies naturally refused to risk their lives, although we subsequently discovered that when it became necessary to do this dangerous march under the worst possible conditions, they were equal to the occasion.

There was the usual difficulty over coolies here—the Mishmis were busy in their fields, cleaning, planting and collecting Opium. The Poppy crop was evidently a valuable one. An average-sized plant produced from three to five capsules, each an inch high and more than an inch through, yielding perhaps R.5 worth of Opium. Thus the smallest patch, containing not less than 200 plants, might be worth anything from a thousand rupees upwards. Much of this would be used locally, of course, but it is reasonable to assume that some of it, at any rate, finds its way to Sadiya, where it is sold, legally or illegally—probably the latter. Enterprising Tibetans are active in the dope-running business.

The Opium is collected by the old women who come out in the early morning and scratch the fattest capsules, wiping off the buff-coloured juice as it exudes on a piece of rag. After a day's rest, the same capsule is cut again, and so on for several days, until it is scarred all over and every drop of latex has been exuded. When one piece of rag is thoroughly clotted with the poison, another is taken; and to remove the Opium it is simply steeped in water—for the Mishmis do not smoke Opium, they drink it! Like all the other hill tribes, they smoke incessantly, men, women and children, but they smoke Tobacco leaf, in pipes, and grow it themselves. They were very fond of the cheapest brand of cigarette, the sort of smoke which in India can be bought for a penny a dozen. The Mishmi system of cutting the Poppy capsules must be entirely empirical, and it might well be that experimental research in this direction—when to cut, how to cut, how long to rest between tappings, and so forth, would yield interesting results, just as it has with the Para Rubber tree.

We were able to buy Peas again here, although they were long since over in the villages down below; but sweet Potatos were 'off,' although we still had a good supply in stock. Fowls were very scarce, and exorbitant. We had to climb about a thousand feet from our camp in order to reach the forest, and having discovered a path, we started off on May 5 to see what we could find. After passing through a belt of Oak forest, where the ruby foliage of sapling Quercus semi-serrata was conspicuous, we came to Tsuga, then Rhododendron sinogrande and other tree species, and finally into a sharp ridge crowded with Rhododendrons, chiefly a glorious 'Barbatum' in full bloom (Fig. 159), and a smaller 'Campylogynum,' allied to R. tephropeplum. The 'Barbatum' trusses were large and tight, the flowers white, pink, or white banded with pink, more or less freckled with purple within, and always with a small, dark purple flush, like an ink-stain, near the base.

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; March 2, 16, and 30; and April 13, 1929.

The range of colour according to the depth of spotting, and the amount, was considerable; the dark green leaves, too, were a fine cinnamon beneath. The trees were flowering freely, and I regarded this as quite one of the best 'Barbatums' I had ever seen. However, it is not new; I collected it in the Di Chu valley in 1926, but did not see it in flower; it looked attractive, and here was the confirmation. The 'Campylogynum' was an altogether smaller plant. It was a shrub with smoky-grey leaves and purple-pink flowers; I would have put it down as R. tephropeplum, but for the fact that the truss carried seven or eight flowers instead of three or four. They are closely allied species.

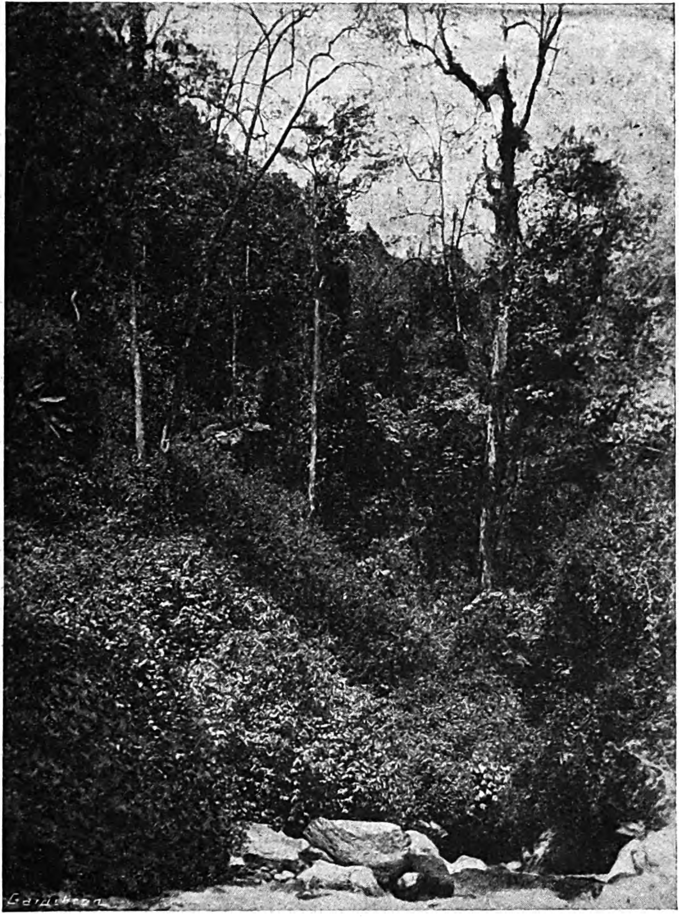

FIG. 158.—TROPICAL RAIN FOREST IN THE DELEI VALLEY, 4,000 FT. ALT.

The tree on the right is Altingia excelsa.

Another small tree which was in full bloom, filling the dark forest with moon-beams, was Viburnum Wardii, gleaming coldly white. Meanwhile, lured on by this treasure trove, I had outstripped my companion, and presently found myself alone; the lunch ration was with him. Now, from the position of the sun, I judged it was time to return, but after leaving the ridge I missed the way. Instead of turning back, I went on down through the forest, from time to time traversing in the direction I believed the path to lie, hoping thus to cross it. The going became worse and worse, and I was unlucky enough to strike a part of the forest where the undergrowth was really dense. At last, just as the sun was sinking behind the opposite range, I came out into the open, and saw the river far below. The worst was yet to come, however; I had passed from the frying pan into the fire with a vengeance! I now found myself in abandoned cultivation, where the dense secondary growth made progress even more difficult than in the forest; the bushes and Brambles grew so high that I could not see where I was going, and twice I came to the brink of a precipice, and was forced to retrace my steps. At last I found a way down into the valley, where, about dusk, I picked up the main path some distance below our village; it was nearly eight o'clock when I got back to camp. Buttercup, who had lost both me and the path on the way up, had abandoned the ascent, but always loyal, waited for my return several hours on the mountain, and did not get back himself until five; he was greatly relieved to see me, fearing I had met with an accident.

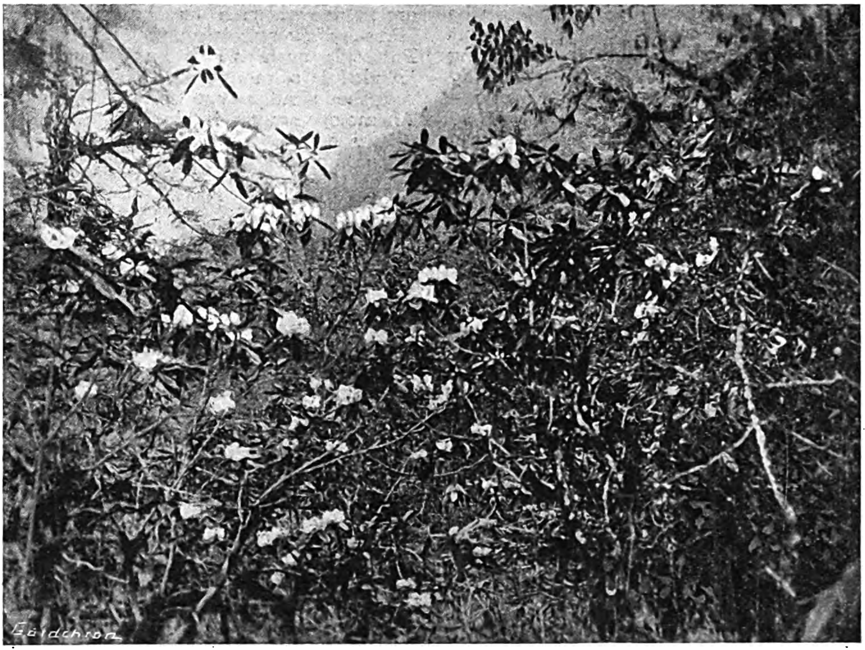

FIG. 159.—EARLY RHODODENDRONS; A BEAUTIFUL SPECIES OF THE 'BARBATUM' SECTION.

I still had the bunch of Rhododendrons I had gathered, but they were a sorry sight after my struggles in the rough. *F. Kingdon Ward.*

NOTES FROM A WELSH GARDEN.

Although so many of the Wallflowers were killed by the frost, one of them not only came through unharmed, but is to-day (early April) in better bloom than it has been for years. This is the variety Harper Crewe (also known as Miss Hope), perhaps the best of all the old yellows, with an individuality quite its own. Its small, buttony, double flowers are closely arranged in upright, finely-tapered spikes, and the sepals of the opening buds, being a tawny-bronze, add an additional warmth to the richness of their yellow. Erysimum linifolium has been completely destroyed, so that a long desired combination of its lavender with the pale citron-yellow of Cheiranthus alpinus var. Moonlight, must for another season be counted among "the hopes that triumphed and fell dead."

Cruciferous plants are apt to dominate the April rock garden, but one can scarcely have too much of the double-flowered Cardamine pratensis, and some of the Aubrietias are not to be scorned whatever the purist may have to say. A plant of Magician, or Vindictive, or Gloriosa, or Lavender, well-grown, can be pleasanter company than many a disgruntled alpine, and the splendid courage with which such plants have restored their frost-bitten foliage and covered the scars of winter with fresh green and bountiful blossom, is enough to give the most dismal of Jeremiahs fresh hope. Although not often seen, those two forms of Aubrietia usually listed as A. argentea var. variegata and A. aurea var., are worthy of note. Both are rather shy growers, but the small, round flowers in a soft lavender are delightful, squatting close upon the low mats of the silver or the yellow, the former variety being much the smaller of the two. Arabis Sturii is also a cheery little Crucifer with goodly-sized flowers of a sound white on three-inch stems. With pink-flowered Arabis, little satisfaction has been derived here. Many have been secured under various names, but most of them are too much alike, and all seem to stop short of being good enough for choice company.

Aethionema (Eunomia) rotundifolium is a small, creeping species, which does not often show us any more than its low, tufty mat of blue-grey leaves, but a frosty winter and dry spring have induced it to produce a quantity of pale-pink flowers, nestling among the metallic foliage. Much like this in its close, dwarf habit and glaucous-blue leaves is Veronica telephifolia. In an old stone trough, this wee Speedwell of Ararat has been bearing a cheerful crop of clear, pale-blue blossoms since the middle of March. Not unlike V. saxatilis, but at least a fortnight earlier, is the creeping V. satureioides, which brightens the rather sullen violet of its large flowers with prominent anthers of a ruddy crimson. Trifolium uniflorum is a pretty little thing for a close-up ledge, making a small, compact cushion of bronzy foliage, which is now decked with short-stemmed Pea-flowers in rose and white. Near this is another mite of a mighty race, Euphorbia pilulifera, which threads its way between the stones of a hot, dry wall, here and there putting forth a glaucous-leaved rosette bearing a posy of yellow only about two-eighths-of-an-inch across. Another Liliput with yellow flower-clusters of microscopic dimensions which must not be overlooked, is Salix retusa var. serpyllifolia, which occupies a ledge of cool, moist soil. This is surely the minutest of all shrubs.

Aethionemas, like Lithospermums, have been rather a sorry sight since the frost, but some plants of the peerless A. Warley Rose came through and are flowering well. Potentilla Thomasiniana, a Dalmatian species, has made a lovely mat of its downy, silver-green leaves which are nearly hidden beneath the short-stemmed, yellow-flowers. Most of the Saxifrages are showing their appreciation of a dry winter and drier-spring, the 'Mossies' being unusually firm and sturdy. The rock garden Phloxes are equally happy. mainly because they have got away before their arch-enemy, the slug, whose coming has been delayed. There are so many delightful Phloxes of the subulata and Stellaria groups that a novelty which will stand out in conspicuous splendour among such a host of good things must be a plant of uncommon quality. Even so, such a one has arrived in P. Camla, which is only just beginning to flower here, and to which I hope to refer some other time.

The weather conditions have suited Primula marginata admirably, the type species and one or two colour forms, notably P. m. var. Rhenainia (perhaps a hybrid) being first-rate. The exquisitely beautiful P. Linda Pope is also commencing to show its large, blue-lavender, mealy-eyed blooms. P. hirsuta, with rose-pink flowers, is a cheerful little alpine, and among a set of the P. pubescens (nivalis) class the rich crimson Faldonside, the deep blood-red Ruby, and Mrs. Wilson, will not escape admiration. The last is not so good a colour as many of its section, but its extraordinary vigour and wonderful fragrance are qualitites of no little value. P. glaucescens is another happy thing that can be recommended to any who are on the look-out for an easy, early, permanent, free-flowering Primula of its kind. P. rosea is especially charming just now, covering its wintered mound of shrivelled foliage with golden-eyed flowers in the most exquisite of pinks. Moreover, this beautiful species has sent its seedlings travelling all around a small pool, and there are few things more attractive in the garden than this family of pretty adventurers.

Among the Erythroniums "now showing," those of the E. revolutum section, notably the creamy-white Watsonii, the bright rose Johnsonii, and the paler pink, Pink Beauty, are conspicuous for their size, colours and elegance. The lilac and mauve E. Hendersonii is also very attractive, and a peculiarly entrancing one lately seen in a friend's garden was labelled E. grandiflorum var. robustum. This variety stands nine inches high, and the large, reflexed flowers are a bright buttercup-yellow. The anthers are white or red, and the long, tongue-shaped leaves unspotted. In the cool soil which these supremely graceful things enjoy are the Shortias, now coming into flower. Sanguinaria canadensis is pushing its milky-white flowers out of its dove-coloured leaf-scrolls, and in a scree-bed close by an old colony of the lovely Anemone vernalis is blossoming with its accustomed freedom.

There is no more beautiful grouping in the garden at the moment than a low, spreading bush of Magnolia stellata, bearing quantities of blossom, underneath which is a broad azure drift of Omphalodes cappadocica (cornifolia), while beyond, at the water's edge, are the big yellow spathes of Lysichitum camtschatcense. In this company is Rhododendron ciliatum which, although a very young plant, is carrying several trusses of bloom. This is not a reliable species here, and it is, of course, very apt to lose its flowers in spring frosts. But its big, campanulate flowers are so beautiful with their shell-pink exterior and pearl-white lining, their delicately-frilled margins and delicious scent, that R. ciliatum is a species one must count among the indispensable. Another deliciously fragrant shrub which is flowering well and whose blooms will expire with a very few degrees of frost is Osmanthus Delavayi. Camellias are usually regarded as rather tender shrubs, and many of them probably are. But some of the C. japonica class are so hardy that one in particular, var. Donckelaarii, had not so much as a leaf discoloured by the recent frost, and it is now carrying a fine crop of its semi-double, crimson blooms.

Erica arborea was the first of the Tree Heaths to succumb last February. It was killed outright, yet E. a. var. alpina growing close by escaped without the slightest harm. Precisely the same thing happened in a neighbour's garden, and the incident is significant in demonstrating the extraordinary diversity in the hardiness between a variety, or form, and the type; E. australis, oddly enough, survived the ordeal unscathed and entirely without protection. Even in the hill-top garden referred to, this fine species came through the frost without a leaf being browned and the thermometer there ranged between 22° and 25° for several days. *A. T. Johnson, Ro Wen, Conway, N. Wales.*

NOTES FROM WISLEY.

The recent alterations to the rough piece of ground between the Bamboo walk and the rock garden, and the formation of an alpine meadow, are now beginning to bear fruit, and already there is much of interest to be seen in this portion of the garden. The grass is now studded with Crocuses and Narcissus Bulbocodium, and drifts of blue are formed by the flowers of Chionodoxa Luciliae and Anemone blanda. Many of the St. Bavo type of Anemone are also coming into flower. Plants of Gentiana verna are now being planted out, but it remains to be seen whether small subjects such as these will not be overwhelmed by the grass, the vigour of which, however, is checked by the poverty of the soil.

In the rock garden itself many Anemones are in flower, such as the intensely blue A. Hepatica var. angulosa and varieties of Anemone Pulsatilla, such as Farrer's pink variety and the delightful salmon-pink Mrs. van der Elst. A rather similar type of Windflower is seen in Anemone vernalis, having white flowers with a yellow centre. One of the most attractive features of this plant is the soft brown fur with which the buds are invested. Many Saxifrages are in bloom on the rock garden, including Saxifraga Burseriana minor and S. oppositifolia. Good varieties of the latter include S. o. latina, a good grower, and S. o. W. A. Clark, with extremely vividly-coloured blooms. Bulbs in flower on the rock garden include Scilla bifolia carnea, with white flowers flushed with pink; and Chionodoxa Luciliae alba, certain flowers of which are not completely white but present an opalescent appearance which is not unattractive. A few interesting Daffodils are also in flower in the rock garden; Narcissus maximus is blossoming freely, as are a hybrid between Narcissus cyclamineus and N. poeticus, and N. capax plenus with pretty little double, sulphur-yellow flowers.

The alpine house now seems to have completely recovered from the great frost and is full of interesting things, among which may be mentioned Primula Baileyana, a deep lavender-flowered Primrose, introduced by Captain Kingdon Ward, the blooms of which are fragrant, and speckled with farina. Another rare Primula in bloom is P. eucyclia, which scarcely exceeds one inch in height. The flowers are pink and the whole plant suggests a miniature Crane's-bill. Better known are Primula hirsuta and P. marginata, of which there are good specimens in flower. A handsome hybrid of the latter is Primula Marvin (marginata × venusta). There is also a large-flowered, thrum-eyed plant of P. Winteri named Wilbrook Seedling, and a huge-flowered form of P. acaulis (Evelyn Arkwright) which has nothing to distinguish it, save its large size.

One of the prettiest little plants in this house is Jeffersonia dubia, a native of Manchuria; it has incompletely cordate leaves and delicate, lavender flowers. Another pretty plant which has quickly thrown off the effects of the frost is Rhodothamnus Chamaecistus, a tiny shrub now covered with pink blossoms. Other dwarf shrubs in bloom include the very fragrant Daphne Blagayana. The number of buds on Daphne rupestris (petraea) is also noteworthy. Among the smaller and less showy plants which are apt to be overlooked, mention may be made of Androsace pyrenaica, which makes a tight cushion of green. It is now in bloom, and in spite of the very small size of the flowers in the case of some specimens, they almost entirely hide the foliage.

In the alpine house frames some uncommon bulbous Irises are in bloom, namely Iris orchioides and I. bucharica. They have yellow and cream flowers and pale green foliage.

In the wild garden, Rhododendron lutescens is in bloom, but is not very effective. R. praecox has flowered well, but the frost has completely spoiled the bloom, which is so susceptible that the usual methods of protection do not seem to be of any use. Some of the blooms of Pieris japonica have also suffered from late frosts, which have been very severe. Fortunately, the cold does not seem to have affected plants of Corylopsis spicata which are flowering well, and which in previous years have often been spoiled. Bamboos, however, such as Arundinaria nitida, present a sorry spectacle even in the most sheltered parts of the gardens.

A visit to the upper trial grounds is well worth while, for there are flowering some of the late Mr. W. R. Dykes' collection of Tulips, among which are some most beautiful forms of T. Kaufmanniana, the colours ranging from cream and pink to deep yellow and scarlet. In bloom with the latter are Tulipa Sprengeri and T. turkestanica, which has several flowers on one stem. In company with the Tulips are planted other bulbs, such as Scillas, and among these are Scilla cappadocica and S. cilicica, the latter a most graceful little plant somewhat like S. sibirica, but having a more open flower. The largest-flowered Scilla in the gardens is S. sibirica var. atrocoerulea, with monster blooms, of which there are a great number open near the main entrance to the Laboratory.

Many of the plants on the Laboratory walls are still looking very unhappy, but it is pleasant to record that Berberis Fremontii, with its distinctive glaucous foliage, has withstood the cold well, and is now making its new growth, that is bright red when it first appears. A somewhat similar plant, but with longer leaflets, also planted against the Laboratory, is Berberis haematocarpa. *J. E. Grant White.*

NOTICE OF BOOK.

The Perfumes of Flowers.

The new edition of Vol. II of Mr. W. A. Poucher's work on Perfumes, Cosmetics and Soaps,* is a handsome and very adequately illustrated book. The work is well-known as an authoritative treatise to all those engaged in the manufacture of perfumes and cosmetics. Moreover, the book contains a great deal of information of interest to the general reader, and especially to those attracted to horticulture.

The cultivation of sweet-smelling flowers and aromatic plants for perfumery purposes is an important branch of horticulture, which has its headquarters at Grasse, near Cannes, in the south of France. The industry is also carried on in many other parts of the world, including our own country, whose moist climate is specially adapted for the cultivation of Lavender and

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* *Perfumes, Cosmetics and Soaps, with Especial Reference to Synthetics*, by William A. Poucher, Ph.C.; Vol. II, being a *Treatise on Practical Perfumery.* Third edition (enlarged and revised). 8½ ins. × 5½ ins., pp. xiv—521—45 plates. London: Chapman and Hall, Ltd., 11, Henrietta Street, W.C.2. Price 25s. net.

Peppermint destined to be distilled in order to obtain their essential oils.

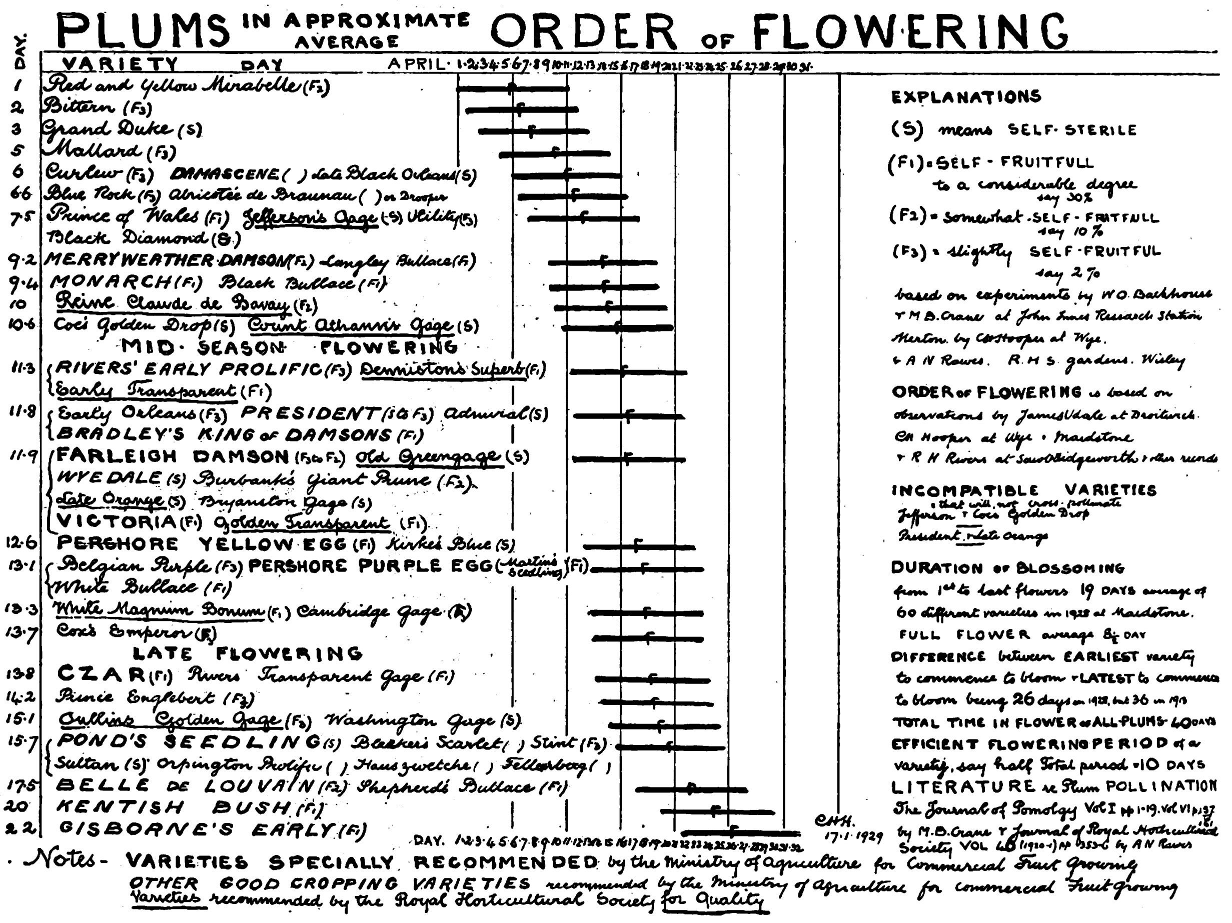
Mr. Poucher's work opens with an extremely interesting historical sketch in which the progress of perfumery is traced down the ages from remote times. The earliest floral perfumes appear to have been made by steeping sweet-smelling flowers in Sesame, Olive and similar oils. Perfumes of this type, so well as incense made from various aromatic gums and resins, were employed by the ancient Egyptians. They also made use of cosmetics of various types, especially kohl, a black paint for darkening the eyebrows and eyelashes; and, among the many illustrations adorning the book under review, are photographs of a number of ancient Egyptian kohl vases from the British Museum collection.

In the second chapter, various theories are discussed which have been put forward from time to time to account for the formation of perfume material by plants, and the part played by this material in the economy of plant life. Full details are also given of the various methods adopted for the extraction of the perfume, a task which calls for considerable care, since, owing to the complex chemical character of the odorous material it is very liable to be spoiled during the process of extraction. The most important method is distillation in the presence of water, whereby an immense number of essential oils are obtained. Finer products, however, are procured by the methods known as "enfleurage" and "extraction with volatile solvents." In the first, extraction of the perfume material is effected by means of solid fats in the cold. In the second, the odorous substances are dissolved from the flowers by means of an easily volatile solvent, usually refined petroleum spirit, which can be removed by subsequent distillation.

The sixth chapter will be read with great interest by all flower lovers, as it consists of monographs on the more important plants whose delightful odours are reproduced in handkerchief scents and various perfumed cosmetics. In certain cases, such as, for instance, those of the Rose, Jasmine and Mimosa, use is made, at any rate in high-class products, of material obtained from the flowers in question, supplemented with other suitable odorous substances. In other cases, the appropriate odour is obtained entirely by means of synthetic chemical products and substances derived from other plants, instances being afforded by Cyclamen, Lilac, Hawthorn and Sweet Pea odours. In these monographs, full botanical and chemical details are given concerning each species, as well as particulars of the cultivation of those species which are grown for perfumery purposes.

The main bulk of the book may be stated to constitute a series of illustrations showing how the various perfume materials, both those obtained from plants and those of synthetic origin, can be used, every conceivable type of perfumed cosmetic being dealt with.

We owe a big debt to the perfumer for making available for our delight the fragrance of flowers when these are no longer in bloom, and Mr. Poucher's book is a very admirable account of the practical side of this little known art. *H.S.R.*



EXPLANATIONS

(S) means SELF-STERILE

(F1) = SELF-FRUITFULL to a considerable degree say 30%

(F2) = somewhat SELF-FRUITFULL say 10%

(F3) = slightly SELF-FRUITFUL say 2%

based on experiments by W. O. Backhouse & M. B. Crane at John Innes Research Station Merton, by C. H. Hooper at Wye, & A. N. Rawes, R.H.S. gardens, Wisley

ORDER OF FLOWERING is based on observations by James Udale at Droitwich, C. H. Hooper at Wye & Maidstone & R. H. Rivers at Sawbridgeworth & other records

INCOMPATIBLE VARIETIES & that will not cross-pollinate
Jefferson & Coe's Golden Drop
President & Late Orange

DURATION OF BLOSSOMING
from 1st to last flowers 19 DAYS average of 60 different varieties in 1928 at Maidstone.
FULL FLOWER average 8½ DAY
DIFFERENCE between EARLIEST variety to commence to bloom & LATEST to commence to bloom being 26 days in 1928, but 36 in 1913
TOTAL TIME IN FLOWER of ALL PLUMS 40 DAYS
EFFICIENT FLOWERING PERIOD of a variety, say half Total period = 10 DAYS

LITERATURE re Plum POLLINATION
The Journal of Pomology Vol I pp 1-19, Vol VI p 137-161 by M. B. Crane & Journal of Royal Horticultural Society VOL 46 (1920-1) pp 353-6 by A N Rawes

· Notes - VARIETIES SPECIALLY RECOMMENDED by the Ministry of Agriculture for Commercial Fruit Growing
OTHER GOOD CROPPING VARIETIES recommended by the Ministry of Agriculture for commercial Fruit growing
Varieties recommended by the Royal Horticultural Society for Quality

ORDER OF FLOWERING AND POLLENATION OF FRUIT BLOSSOMS.*

(Continued from p. 299).

PLUMS.

Plums are grouped according to pollenation experiments into three classes:—1, those that are considerably self-fruitful; 2, those that are absolutely or very nearly self-sterile; and 3, a few that are partially or slightly self-fruitful. The most self-fruitful group includes:—Pershore Yellow Egg, Pershore Purple, Victoria, Czar, Denniston's Superb, Monarch, Shepherd's Bullace, Kentish Bush, Early Transparent, Prince of Wales, Bradley's King of Damsons, and Gisborne's.

The partially self-fruitful varieties include:—Rivers' Early Prolific, Early Orleans, Cox's Emperor, Prince Englebert and Belgian Purple, while the self-sterile varieties include:—Pond's Seedling, Green Gage, Jefferson, Bryanston Gage, Late Orange, President and Coe's Golden Drop.

Of the self-fruitful varieties Pershore Yellow Egg Plum fruits perfectly in Worcestershire without another variety, and yields as heavily as Potatos, but all the other kinds yield more heavily if pollenated with pollen of another variety.

Some suggestions based on pollenation experiments and orchard practice may be found useful:—Rivers' Early Prolific crops well with Prince of Wales, Czar or Monarch; Pond's Seedling with Czar or Kentish Bush; Belle de Louvain with Czar or Kentish Bush; Monarch and Rivers' Early Prolific or Prince of Wales; President with Czar; Victoria with Czar; Oullin's Golden Gage with Pershore Purple.

For the three specially shy bearing kinds, namely Coe's Golden Drop, Green Gage, and Bryanston Gage, Mr. M. B. Crane, of the John Innes Horticultural Institution, states that for Coe's Golden Drop he has found Pond's Seedling, Rivers' Early Prolific and Monarch to be good pollenisers; for Green Gage he has found Pershore Yellow Egg, Pond's Seedling, Czar, Early Orleans or Bradley's King of Damsons to be good pollenisers, and for Bryanston Gage, Rivers' Early Prolific.

At Wye there is an interesting fruit garden of four acres enclosed by a circular wall about nine feet high; on this wall are trained trees of different varieties of Plums, and there are three hives of bees in the garden. These shy-bearing Plums all fruit here almost as plentifully and regularly as the Victoria. Mr. Crane finds Late Orange and President to be inter-sterile, and in like manner Coe's Golden Drop and Jefferson; so one should avoid planting these varieties together for cross-pollenation.

The accompanying table shows the approximate order of flowering of Plums.

(To be continued.)

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* A paper read before the Royal Society of Arts, Wednesday, February 13, by Mr. Cecil H. Hooper, F.L.S., of Wye, Kent.; Mr. H. V. Taylor, O.B.E., Commissioner for Horticulture, Ministry of Agriculture, presided.

HOME CORRESPONDENCE.

[*The Editors do not hold themselves responsible for the opinions expressed by correspondents.*]

Snowdrops.—Everybody loves the Snowdrop; it is beautiful as a small clump in a cottage garden, clothing the bare ground under deciduous shrubs, or spangling the grass and clustering about the buttress roots of giant trees. Perhaps the place where it is most at home is among the moss and decayed leaves in thin woodland; here, too, it suffers least of all from inclement weather and the stalks are longer and more suitable for arranging in bowls, etc. There is no difficulty in its cultivation, for it will grow anywhere; but for some reason it is rare to see it comfortably established. Enough Snowdrops have probably passed through bulb merchants' hands, and the London sale rooms, to carpet the gardens of England. What becomes of them? Many sold in late autumn are already half dead, having been out of the ground when they should have been making roots; consequently they fail miserably. Late summer or autumn may be the best seasons to buy and sell Snowdrops, but now is the time to divide and replant them in positions where it is not likely that an unskilled man will dig or fork—" out of sight, out of mind " is an old proverb—and, indeed, disturbance is too often the cause of disaster in the case of the lowly Snowdrop. It is sacrificed and buried by the forking necessary to control the weeds. When left undisturbed for a few years the bulbs will increase rapidly, and self-sown seedlings spring up, although the latter take several years to reach the flowering stage. *J. Comber, Nymans.*

Narcissus minimus.—This delightful little Daffodil opened its first blooms here on a sunny rock slope, on March 24, the latest date on which I have a record. In 1890, when I had a seaside garden on the Solway, it was in flower on January 13, the earliest date of which I have any note. In the same garden my latest record was in 1891, when it did not flower until February 28. In an inland garden in later years it did not flower until March 2 (1915), as compared with February 14 two years before. This miniature Daffodil should be grown much more extensively in the rock garden, where it is quite in harmony with the smallest of alpines. But it seems impossible to secure the exceedingly small form of N. minimus we were able to procure on its introduction to cultivation. This was much smaller and neater than the form now obtainable. I believe this Narcissus is very variable in its native habitats, and it is possible that the smaller variety may yet be re-introduced. *S. Arnott.*

Manuring Arable Land.—Although born on a farm, I know little of farming. Horticulture has been my profession, therefore I plead ignorance of the amount of manure it is possible to plough into average farm land. Recently, when discussing the poverty of certain land, I suggested that instead of the usual ten or twelve tons per acre, the dressing should be increased to twenty or twenty-four tons, but was told that it was impossible to plough in such an amount. Gardeners know the value of heavy dressings of farmyard or stable manure to provide humus in the soil, and as very many gardeners have charge of arable land, I would like to know what is the heaviest dressing of manure they have ploughed in. In other words, has any reader ploughed in twenty or twenty-four tons of manure per acre, and if so, what traction was used. This is not an idle question, nor is it one of passing interest; it is a matter of very great importance. *C. de B.*

Glossiness in Flowers.—In his excellent article under the heading of " Ranunculus gramineus " (March 23, p. 220), your correspondent, Mr. J. Parkin, raises an interesting point in his reference to the glossy type of petal found in the majority of the Buttercups, and goes so far as to assert that this characteristic of some of the Ranunculi is " probably unique among flowers." It must, in fairness to Mr. Parkin, be pointed out that he uses the non-committal term " probably," but is so sure of himself as to throw out a challenge to all and sundry to produce a worthy rival. His contention is certainly something of a " poser," and a difficult proposition, for, in my opinion, with only a single exception, one is forced to admit that Mr. Parkin has much to substantiate his claim, and a " clear case " for his champion. A host of subjects occur to the mind, which on first thought might be put forward as having the necessary " glazed " appearance to warrant being considered on a par with the Buttercups; for instance, Lapagerias, Rhododendron Roylei or R. campylocarpum, and, again, some of the deeper shades of single Dahlias, etc., etc.; but on further consideration, could one honestly call any of these glossy? Rather would the term " waxy " be a nearer approach to the correct description. The one exception to which I refer, and in my humble opinion, the only one that is in a position to challenge the supremacy of the Buttercup, is the Oriental Poppy (Papaver orientale), and I bring this lowly—but by no means humble—occupant of the herbaceous border to the notice of Mr. Parkin, and let him judge. I refer, of course, more particularly to the scarlet varieties of the species—such as Lord Lambourne—as I would not go so far as to assert that the white or pink shades possess the same lustrous sheen that the scarlet varieties do, and consequently do not put them forward as rivals to the Buttercup in the distinctive feature of glossiness. It would be interesting to have other readers' views on this highly interesting subject. *T. Wilson, New Barnet.*

What shall we do with our Greenhouses?—Mr. W. F. Baker's admirable and broad view of this subject has earned my gratitude. I am sorry others have not written. The law of supply and demand always controls the particular situation, and an observant man can generally find out what sells best. My main point was to foster the employer's interest in greenhouses, be it scientific, pleasurable, or commercial, and so revive a department that since the war has seemed a " white elephant." *G. H. Emmett, The Gardens, Taplow Court.*

Gardeners' Pay and Agricultural Scholarships.—I have been interested in the discussion on " Gardeners' Pay and Status." There seems to be a concensus of opinion that wages are too low, but that they cannot be forced up. On the whole, the attitude of correspondents impresses me as moderate and wise. There is, however, an angle from which the matter might be considered other than improved education through mutual improvement societies, and that is to lighten the pressure of young labour by finding other outlets for it. It is the fact that very many boys go into gardening because they like it, and although they are dissatisfied later in life, owing to the poor emoluments, they do not find other outlets for their own sons to any particular extent. On the contrary, there is a pronounced movement of gardeners' sons into the profession, and the abundant supply of young gardeners tends to prevent a general rise in wages. This is in accordance with the recognised effect of supply and demand. So far, nobody will disagree with me, but when I proceed to mention agriculture as an alternative, there will be a general gasp of amazement. Nevertheless, I make bold to draw attention to the fact that very attractive scholarships are offered for the sons of working folk (among whom gardeners would be classed officially) in cases where the boys have done at least one year's practical work of certain kinds, which include horticulture. Let us suppose that a gardener's son has left school at fourteen and worked two years in a garden. He has become eligible for a scholarship, tenable at a farm institute, of a very handsome kind. Not only are board residence, tuition fees and laundry covered, but allowances are included to provide for extra clothing, books, games, club subscriptions, etc. At the farm institute he will receive practical instruction in commercial horticulture, such as market gardening and fruit-growing, in addition to dairying, poultry-keeping, and more distinctively agricultural jobs. Surely this is worth considering, yet in some counties, at all events, the response has been very poor indeed. I suggest that gardeners who are dissatisfied with their own rewards, and yet who are in doubt as to what to do with their sons, write to the Ministry of Agriculture and Fisheries, 10, Whitehall Place, London, S.W.1 (or alternatively, to their County Agricultural Organiser) for Form A141/TE, and give it careful consideration. It might very well be that a certain number of boys who have had a preliminary horticultural grounding (perhaps in the gardens managed by their fathers, perhaps under other professionals) would prove so apt that they would qualify for higher wages as foremen, or pruners and grafters, in commercial plantations or market gardens. In any case, I can hardly imagine their being anything but better qualified to earn their living for the experience which they had undergone. At the very least they would gain an insight into a wider range of work. As the situation is one for practical suggestions (which it will be agreed are not easily found), I offer this as a modest contribution. *W. P. W.*

The Late Mr. John Cypher.—Everyone will agree with *A. F.* (*The Gardeners' Chronicle* of March 23) that the late Mr. John Cypher's great services to horticulture and to horticultural societies in particular, are worthy of some lasting recognition. As *A. F.* truly states, everyone loved Mr. John Cypher; he was loyal to his friends and always ready to do anyone a good turn, and he endeared himself to a very wide circle of friends by his many acts of kindliness. I personally received much kindness from him in my early days, and little thought then that I should be called upon to judge so many of his wonderful exhibits. It is very pleasing to see his family nobly carrying on the tradition of a famous name, with its long and distinguished record. I am much in favour of the suggestion put forward by Mr. Barnes in your issue of January 5, and feel sure that if exhibitors or some society would take the matter up, there would be no lack of financial support for such a purpose. *F. Jordan.*

THE FUTURE OF THE POTATO.

Mr. W. Cuthbertson discusses, in your issue of March 30, a policy which he recommends should govern the selection of Potato varieties; in particular, he stresses the importance of retaining outstanding seedlings which are susceptible to wart disease. Mr. Cuthbertson has exceptional knowledge of the Potato, and his opinions carry great weight.

Anything which tends to break the rigidity of outlook among our breeders is to be welcomed, and the writer desires to call attention here to some other aspects of the problem. These notes, moreover, are intended to provoke discussion, as the writer has not a wide commercial experience, and may not, therefore, be in possession of all the facts.

Many raisers discard seedlings, not only because they are susceptible to wart disease, but also because they have (1) yellow or pale yellow flesh, and (2) pink or red skin.

Why yellow flesh should be regarded as a merit in many parts of Europe and a fault in others, has always been a mystery to the writer. Yellow flesh is not correlated with any commercial quality, and a yellow-fleshed variety may excel present-day white-fleshed varieties in all directions. The same is true of pink or red tuber skin. The disadvantages of a dark purple skin are obvious, but surely the popularity of Kerr's Pink should be sufficient answer to those who assert that seedlings with pink skins must be discarded. It appears that these two prejudices are founded neither on reason nor experience.

In discussing the future of the Potato, Mr. Cuthbertson rightly keeps in view the question of cooking quality. To the writer, it seems that this question has not always received the attention it deserves, and there is no doubt that investigations on the subject must be made in future. Mealiness and good flavour seem to be essential qualities in this country, but these are not enough; more must be known about feeding values, digestibility, vitamin contents, blackenings, etc.

Do virus diseases account for all the deterioration of Potato stocks, as many authorities state? In the writer's opinion the environment in which the "seed" was grown contributes something at least to the potential yielding capacity, quite apart from its effect on the distribution of virus diseases. This is a matter for future investigation; it is not enough to state that in the absence of virus diseases a certain level of productivity can be maintained; high yields may quite readily be the expression of a favourable seed environment. It is not an uncommon experience to see two stocks of the one variety growing side by side in the same field and exhibiting differences in "vigour" and yield, yet showing no obvious variations in the incidence of virus diseases. Horticulturists sometimes meet what are known as "hide-bound" Potatos which, when planted, produce small plants and small yields, and which generally do not decay before lifting time. This, of course, may represent an extreme condition and be due to faulty storage, yet it is sufficient to indicate that the potential yielding capacity of "seed" does not depend on virus diseases alone when other diseases and injuries are absent. *T. P. McIntosh.*

FRUIT GARDEN.

THE ALPINE STRAWBERRY.

Although this fruit cannot take the place of the well-known garden varieties, it certainly deserves more attention than it obtains. The flavour of a fully ripened fruit is distinct and rich, yet elusive, a flavour one can never have enough of. A search among the foliage will usually be rewarded during the months of July, August and September, even after the first flush of fruits is over. Many connoisseurs consider the fruits are never better than when eaten freshly gathered from the bed. There are also ways of preparing them for the table, especially in Continental cookery.

The best strain I know of is that sent out by Messrs. Sutton and Sons. The plants are vigorous and productive, bearing fruits of rich flavour and nearly twice the size of the ordinary Alpine Strawberry.

Seeds sown in April or May in a cold frame soon germinate, and if the seedlings are transplanted when large enough to handle, they will make good plants by mid-August, when they should be placed in their permanent quarters. A plot from which second early Potatos have been lifted will usually be found in excellent condition for their reception. Plant them in rows two-and-a-half feet apart and allow one-and-a-half foot between the plants. Subsequent culture consists of cutting off all runners, and hoeing sufficiently to keep a good surface tilth between the plants.

Although I have grown these Strawberries for many years, I never remember any plants affected by disease. The fact that they are raised annually or biennially from seeds may account for their immunity; another important factor is that the new bed is usually formed on fresh ground at some distance from the old one.

Provided there is sufficient lime in the soil an artificial manure compounded of 3 lb. of sulphate of ammonia to 12 lb. of superphosphate may be used with advantage at the rate of 4 ozs. per square yard in April. Slugs are a nuisance in moist seasons. Caustic lime applied in the form of fine dust early in the season, when the slugs are feeding, is a remedy free from risk, although bran poisoned with Paris-green is the more deadly.

At flowering time, clean straw should be placed among the plants for the fruits to rest on later. It is rarely necessary to net the bed, as the fruits are generally protected by the foliage. *J. Comber.*

SOCIETIES.

NATIONAL ROSE.

April 19.—The Annual Spring Show of Roses was held at the R.H.S. Hall, Westminster, in warm, sunny, spring weather. The exhibits were fully up to the average in numbers and the quality was very good, although there were fewer new seedlings than at former spring shows, and only one Certificate of Merit was awarded. During the morning, Princess Mary, Viscountess Lascelles, visited the show and expressed great admiration for many of the exhibits. The attendance was not so large as usual.

Certificate of Merit.

Julien Potin.—As shown, this is an exceedingly beautiful Pernetiana Rose, but we suspect that the outer petals fade quickly, and so would detract from the glowing beauty of the flower. The long stems bear the characteristic glossy, deep green leaves of the type. The flowers, which, upon reaching maturity, are large, are very shapely in all stages, and have long calyces which are often distinctly serrated. The petals are broad, stout, and roll attractively. The colour is a rich golden-yellow which glows in the heart of the flower, and there is a slight fragrance. The variety was distributed in France in 1927. Shown by Messrs. G. Beckwith and Son.

Other Novelties.

The best of the other novelties, Polly, shown by Messrs. G. Beckwith And Son, received the Certificate of Merit in 1927, and a good illustration appeared in *The Gardeners' Chronicle* for September 17 of that year. On the present occasion the flowers were especially fragrant. The colour is rather variable, but generally is of salmon-peach shading, with a deep gold base. Florex, also exhibited by Messrs, G. Beckwith and Son, is an American H.T. variety. It is a fully double, globular, deep pink flower and pleasantly fragrant. Daily Sketch, shown by Messrs. B. R. Cant and Sons, lacks form, but the colour is a vivid orange-scarlet.

Groups of Roses.

The only exhibit staged in Class 1, for a circular floor group of Roses, was that by Messrs. Chaplin Bros., Ltd., and this was awarded the first prize. It consisted of a tall mound of standards and climbing sorts, edged with dwarf Polyantha Roses, among which were floriferous specimens of L'Ideal, Golden Salmon, Locarno and Superba. There were well-flowered standards of Golden Emblem, Lady Inchiquin, Gwyneth, W. E. Chaplin and Betty Hulton, while crowning the group were tall weeping standards of Excelsa, White Dorothy Perkins and Lady Godiva.

Mr. Elisha J. Hicks was first of three in the second class, for a group of cut Roses on staging twenty feet by three feet, with a magnificent bank of blooms. The background consisted of sheaves of Climbing Lady Hillingdon, Climbing Mrs. H. Stevens; and Orange King, La Reine Elizabeth, Coral Cluster, Kersbergen, Pride of Hurst and Frank Leddy, good Polyantha Roses; there was an attractive corner pillar of Mrs. H. Stevens, other outstanding sorts being Betty Uprichard, Padre, Cuba, Angele Pernet and Souvenir C. Pernet. Messrs. Benjamin R. Cant and Sons, Ltd., were second with a charming group in which the richly coloured Padre was prominent, together with Mrs. Beatty, Lady Wakefield, Lady Forteviot and Phoebe, while Mr. George Prince was third.

The only exhibit of six pillar Roses was that by Messrs. Chaplin Bros, Ltd., and this was awarded the first prize. It consisted of elegant specimens of Paul's Scarlet Climber, Tausendschon and Dorothy Perkins.

Messrs. Chaplin Bros., Ltd., were also first for a floor group of Polyantha Roses, and deservedly so. They showed a close groundwork of floriferous specimens of White Echo, Locarno, La Reine Elizabeth, Golden Salmon and Superba, and above these were standards of, among others, Scarlet Leader, Ellen Poulsen, Orleans Rose, Alice, Lady Reading and Coral Cluster. Messrs. William Cutbush and Son, Ltd., secured the second prize in this class with a charmingly arranged group, varieties of note being Mrs. A. Hudig, Mary Casant, Kersbergen, Ellen Poulsen, Sunshine and Frank Leddy. The third prize was awarded to Mr. J. H. Pemberton, whose outstanding specimens were of Golden Salmon, Ellen Poulsen, Chatillon Rose and Kersbergen.

The exhibits in the class for twenty-four blooms, in not fewer than eighteen varieties, may hardly be described as of outstanding merit. Messrs. Frank Cant and Co., Ltd., were first, their best blooms being of Holt Hewitt, Lady Inchiquin, Hadley, Sarah Wright and Dorina Neave; the last named was awarded the Silver-gilt Medal for the best Rose exhibited by a nurseryman. The outstanding blooms in Mr. Elisha J. Hicks' second prize collection were of Crusader, Columbia, Mrs. H. Morse and Mrs. H. Bowles, while among those staged by Messrs. Benjamin R. Cant and Sons, Ltd., which were awarded the third prize, the best were Mrs. Walter Jones, Rev. F. Page Roberts and Mildred.

There were only two entrants in Class 6, for twelve blooms of any variety, namely Mr. A. T. Goodwin, who received the first prize for good specimen blooms of Maréchal Neil, and Messrs. Benjamin Cant and Sons, Ltd., whose second prize exhibit was of blooms of Mrs. Beatty.

Mr. Goodwin was the sole exhibitor in the class for two baskets, each of a distinct variety, and he was deservedly awarded the first prize for grand examples of Frau Karl Druschki and Maréchal Neil, while Messrs. Chaplin Bros., Ltd., were awarded the first prizes in Classes 8 and 9, being the only exhibitors in each. In both classes—the former, for one basket of cut Roses, one variety; and the latter for one basket, one or more varieties—they staged charming arrangements of good blooms of Madame Butterfly.

The Class for six new Roses did not produce any special flowers. Mr. Elisha J. Hicks was awarded the first prize.

Amateurs' Classes.

In the chief amateurs' classes the quality of the blooms was very good indeed and, particularly those shown by Mr. G. A. Hammond, many being exceedingly fragrant. Mr. G. A. Hammond, Burgess Hill, was first in the class for a group of Roses on the staging with a handsome arrangement which included superb blooms of Mrs. Foley Hobbs, Gorgeous, Mrs. Henry Morse, Lemon Pillar and Mabel Morse. Mr. H. R. Darlington, Potters Bar, was awarded the second prize. Mr. Hammond was also first in the class for twelve exhibition blooms, where he staged another superb exhibit. He included, in a perfect specimen of Mrs. Campbell Hall, the Silver-gilt Medal bloom of the section, and also had beautiful flowers of Mrs. C. Lamplough, Mrs. E. Mawley and Mrs. Foley Hobbs. Dr. G. E. Dixon, Norwich, was second.

The best six exhibition blooms were shown by Mr. Cuthbert Dixon, High Wycombe, whose finest were of Mrs. G. Marriott, J. G. Glassford and Mrs. C. Lamplough. Mr. J. N. Hart, Potters Bar, was second of the four exhibitors. With an even set of Mrs. Foley Hobbs, Mr. J. N. Hart was first in the class for six of any one variety, and Mr. C. Dixon was second with the same variety. Mr. T. W. Elcock, Carshalton, won the first prize for six blooms in not fewer than three varieties, and Mr. Hart was first with six good vases of any number of varieties. First prizes for baskets of Roses were won by Mr. G. A. Hammond, Mr. H. Oppenheimer, Caterham Valley, and Mr. L. P. Roberts, Dorking.

The Decorative Classes in the two sections were very attractive, although similar varieties were used in a number of instances. In the dinner table classes, Mrs. L. R. May, who used Lady Sylvia, was first in the open classes, and Mrs. Courtney Page was equally successful in the amateurs' class. Mrs. May had the best bowl of Roses in her section, and Mrs. C. Page won the first prize in the amateurs' class, while Mrs. A. D. Ruff had the best vase of cut Roses.

ROYAL HORTICULTURAL.

April 23 and 24.—There was a large and exceedingly interesting show in conjunction with this fortnightly meeting of the R.H.S., which was held in the New Horticultural Hall, Westminster. One of the principal groups was a superb arrangement of Cymbidiums on a large floor space. There were also several particularly good general collections of Orchids in their accustomed place; the Orchid Committee recommended two First Class Certificates and two Awards of Merit to novelties. Exceptionally good plants of Schizanthus, spring-flowering trees and shrubs, alpines, Roses and Carnations were the chief floral features; the Floral Committee recommended seven Awards of Merit to novelties. Narcissi were again staged in great excellence, and there was an admirable group of Tulips; the Committee recommended one Award of Merit to a novelty. There was no new variety before the Fruit and Vegetable Committee, and only one small exhibit in the hall.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mrs. E. Du Pont (a visitor from America), Mr. Lionel de Rothschild, Mr. Fred J. Hanbury, Mr. Fred K. Sander, Mr. S. H. Low, Mr. R. G. Thwaites, Mr. E. R. Ashton, Mr. T. Armstrong, Mr. Charles H. Curtis, Mr. H. H. Smith, Mr. H. G. Alexander, Mr. W. H. Hatcher, Mr. A. Dye, Mr. J. E. Shill and Mr. J. C. Cowan.

First Class Certificates.

Miltonia William Pitt, Baron Schröder's var.—A gloriously coloured form, with sepals and petals of bright, glowing crimson, and a broad, deep, rose-red, crimson-tinted, blush-margined lip. The mask is white with a few red lines, and the disk is yellow. Shown by Baron Bruno Schröder (gr. Mr. J. E. Shill), Dell Park, Englefield Green.

Brasso-Cattleya Springtide, Stonehurst var. (*B.-C. Maroniae × Cattleya Mossiae*).—A very fine, large-flowered variety of deep rose-purple colouring and a dull gold area over the centre of the fringed lip. Shown by Robert Paterson, Esq. (gr. Mr. A. Merry), Stonehurst, Ardingly.

Awards of Merit.

Odontioda Gwentara (*O. Alcantara × O. Gwendoline*).—In this handsome hybrid the colour is rich cardinal-red with an irregular edging of rose-pink; the lip has a wider rose-pink margin than the sepals and petals. Shown by Messrs. Charlesworth and Co.

Odontioda Marie Antoinette var. excelsa (*Oda. Colinge × Odm. President Poincaré*).—A very pretty and shapely flower with irregular red markings surrounded by blush lines; the margins are rose-coloured and the lip is pink, with a deep red blotch below the golden disk. Shown by Messrs. Charlesworth and Co.

Cultural Commendation.

To Robert Paterson, Esq. (gr. Mr Merry), for Miltonia Phalaenopsis, with fifteen flowers.

Groups.

Messrs. Sanders excelled themselves on this occasion, as they not only occupied their usual position near the dais, but had a big circular group in front of the dais. This was a superb exhibit consisting of twenty large specimen Cymbidiums, each carrying from four to a dozen big spikes of attractive flowers. These fine plants were given ample space on a ground work of moss, mounded towards the centre. The leading varieties were C. Ceres, C. Pauwelsii and C. brugense, and the total number of spikes was one-hundred-and-seventy. In their other group, the St. Albans firm displayed Dendrobium thyrsiflorum, Angraecum sesquipedale, Ansellia africana, Coelogyne Mooreana, Zygopetalum Perrenoudii, Dendrobium Wardianum, D. Dalhousieanum, Odontioda Bradshawiae, Bifrenaria pubigera, B. Harrisoniae, with Lycastes and Masdevallias.

Messrs. J. and A. McBean had a very bright group in which the hybrid Oncidium McBeanianum was conspicuous, but Odontoglossums were the leading feature, and these included O. loochristiense, O. Phoebe, O. crispum in variety, O. percultum, O. Thompsonianum, O. Pyramus and the handsome O. Queen Alexandra. Miltonia Phalaenopsis, Epiphronitis Veitchii and Cymbidium Devonianum were also included.

In Messrs. Stuart Low and Co.'s group, we noted Dendrobium thyrsiflorum in fine form, Cypripedium Massaianum, Cattleya Skinneri alba, Cypripedium niveum, C. Charles Richman, Laelio-Cattleya Wellesleyae, and Oncidium leucochilum. A fine example of Cymbidium Devonianum with five spikes was shown by Mr. J. Evans.

A glorious group of Orchids was submitted by Messrs. Charlesworth and Co., who arranged their plants in a setting of Ferns and moss. The principal subjects were Odontoglossums and Odontiodas. The latter included O. Charlesworthii, O. Nagara, very bright; O. Victoria, O. Eulalia, O. Beacon, O. Aricia and O. Navette. The leading Odontoglossums were O. crispum, O. Omega, O. Toreador, O. Llewellyn, O. Epicasta, O. Victoria and O. Decius. Other fine things on view included Dendrobium Brymerianum, D. infundibulum, Miltonia Lycaena, Vuylstekeara Rudra, Oncidium papilio var. majus and Epidendrum Endresii-Wallisii.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. James B. Riding, Mr. C. F. Langdon, Mr. Donald Allan, Mr. M. C. Allwood, Mr. D. Ingamells, Mr. William Howe, Mr. W. B. Gingell, Mr. R. Findlay, Mr. D. B. Crane, Mrs. Helen Lindsay-Smith, Mr. Charles E. Pearson, Rev. Rollo Meyer, Mr. E. R. Janes, Mr. Arthur Turner and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Charles T. Musgrave (in the chair), Mr. W. J. Bean, Mr. G. Reuthe, Mr. F. G. Preston, Mr. Eric M. Marsden-Jones, Mr. A. Bedford, Mr. L. R. Russell, Mr. T. Hay, Mr. A. Williams, Mr. G. Yeld, Mr. R. C. Notcutt, Mr. W. B. Cranfield, Sir William Lawrence, Bt., Mr. James Hudson, Mr. E. A. Bowles, Mr. T. W. Taylor, and Mr. Amos Perry, with the Marquess of Hartington and Mr. J. G. Millais, visitors, and Mr. N. K. Gould, Secretary.

Awards of Merit.

Astragalus utahensis.—This is a very attractive little Milk Vetch. It is a compact plant bearing silvery stems and leaves, and spikes of rose-purple flowers. Shown by Charles T. Musgrave, Esq., Hascombe Place, Godalming.

Anemone St. Brigid, Mary Seton.—A very handsome variety. The large, well-rounded flowers are substantial in texture, and glowing rose-cerise in colour, with a definite paper-white zone. Shown by Mrs. M. B. Henderson, (gr. Mr. W. J. Symons), Marlborough, Falmouth.

Dianthus Allwoodii var. Prudence.—The flowers of this variety are decidedly larger than usual. The colour is pale pink and the award was given for the variety's value as a cut flower. Shown by Messrs. Allwood Bros.

Hippeastrum Lady Juliet Duff.—This is a gorgeous variety. The flowers are large, round and of rich, glossy crimson colour. Shown by Lady Juliet Duff (gr. Mr. H. Weaver), Coombe Court, Kingston Hill, Surrey.

Omphalogramma sp. K.W. 6,821.—This is a very uncommon and beautiful little plant. The flower, which is produced in advance of the foliage, is only a few inches in height, and has much the general appearance of a single bloom of an unusually large Streptocarpus. The colour is bright blue, and there are creamy-white markings in the tube. The slender, pale green stalk is covered with fine hairs. Shown by Sir John Ramsden, Bart., Bulstrode, Bucks.

Mertensia moltkioides.—This species, which is from the Himalayas, is distinct from most of the genus. It is a compact, free-flowering little plant which, at first sight, suggests an unusually sturdy Forget-me-not. It has small, linear leaves and clusters of blue flowers. Shown by Mr. T. Hay, Hyde Park, London.

Rhododendron charitopes (?), *Forrest* 25,570.—A pretty little evergreen species of erect habit which flowers when quite dwarf. The small, obovate leaves are green above and pale below. The somewhat long-stemmed flowers, which are in loose trusses, are widely expanded, pink, flushed with a few carmine spots; the anthers are erect, but the stigmas incline outwards at a sharp angle. Shown by Lady Aberconway and the Hon. H. D. McLaren (gr. Mr. F. C. Puddle), Bodnant, North Wales.

Cultural Commendation.

A card of Cultural Commendation was awarded to the Director, Botanic Gardens, Cambridge, for particularly good flowers of Rosa gigantea.

Groups.

A very handsome group of Schizanthus hybrids was exhibited by Samuel Wallrock, Esq. (gr. Mr. W. H. Holloway), The Manor House, Stanmore. The exceptionally well-grown plants were in relatively small pots, and the shapely plants bore quantities of large flowers of many beautiful colours. The Studley Horticultural College for Women had a good group of Schizanthus and Stocks, and Messrs. Dobbie and Co. staged particularly good cut stems of Schizanthus. Among the Orchid collections, Messrs. Stuart Low and Co. grouped Acacias, Camellias, Hippeastrums and Genistas.

Flowering shrubs of great beauty were shown by Messrs. Hillier and Sons, Mr. H. Hemsley, Messrs. J. Cheal and Sons, and the Lye Green Nurseries. There were many collections of alpines and the chief exhibitors were C. Kirch, Esq., Edenhall, Beckenham, who included Daphne petraea, Androsaces, Ranunculus crenatus and Auriculas. Mr. Clarence Elliott, Messrs. Casburn and Welch, Messrs. W. H. Rogers and Son, Messrs. Bakers, Mr. Stephen Sims, Messrs. Hollambys, Mr. George E. P. Wood, Mr. W. E. Th. Ingwersen, Mr. E. Ballard, Messrs. Waterer, Sons and Crisp, Messrs. Tucker, Messrs, Maxwell and Beale and Messrs. Prichard and Sons.

Attractive collections of Roses were set up by Messrs. B. R. Cant and Sons, Messrs. F. Cant and Co., Messrs. W. H. Cutbush and Son, and Mr. J. H. Pemberton. Their usual good collections of Carnations were staged by Messrs. Allwood Brothers., Messrs. C. Engelmann, Ltd., and Messrs. Stuart Low and Co. Fanny, Lady Leon (gr. Mr. W. Sorrell), Bletchley Park, Bletchley, displayed many well-grown plants of Cineraria stellata. Messrs. L. R. Russell, Ltd., had a small group of stove plants. Mr. G. H. Dalrymple showed coloured Freesias and Primula pulverulenta. Mr. Charles Hall staged examples of a good strain of long-spurred Aquilegias. Mr. Baldwin Pinney showed Violets, and good Anemones were exhibited by Messrs. Reamsbottom and Co., and by Mrs. Bucknall.

Narcissus and Tulip Committee.

Present.—Mr. E. A. Bowles (in the chair), Mr. Peter R. Barr, Mr. W. B. Cranfield, Mrs. Brodie of Brodie, Mr. L. J. Richardson, Mr. F. Herbert Chapman, Miss E. Willmott, Mr. J. D. Pearson, Mr. Alfred White, Mr. F. A. Secrett, Rev. Rollo Meyer, Mr. Charles H. Curtis, Mr. W. Poupart and Mr. A. Simmonds, Secretary.

Award of Merit.

Narcissus Sunstar.—This is a Barrii bicolor variety of charming form, with firm textured, broad, creamy-white segments which are waved and slightly incurved on the margins. The flattened, frilled corona is rich orange-red, shading to pale orange at the base. The flowers are borne gracefully on rather slender, tall stems, and the narrow foliage is rich, dull green. Shown by Mr. L. J. Richardson, Waterford, as a show flower.

Groups.

One of the most striking displays in the hall was the magnificent ground group of Tulips, in the form of two mounds forming a huge oval bed, arranged by Messrs. Sutton and Sons. It occupied a large portion of the floor space in the centre of the hall, and each plant, bedded in moss, was a grand specimen. Crowning the mounds were masses of the deep scarlet City of Haarlem, and the glowing deep rose King George V. The arrangement of the various colours was very fine, for such varieties as · Solfaterre, primrose-yellow; Prince of Orange, copper; Victory, crimson-red; Zwanenburg, pure white; Edmée, deep rose, shading paler; W. A. Veruly Nerbrugge, bright red; Rev. H. Ewbank, smoky pale mauve; Inglescombe Yellow; and the golden Bouton d'Or, blended or contrasted tastefully, other grand sorts being Louis XIV, Brederode, Afterglow, Ronald Gunn, Bacchus, Mrs. Moon, Antony Roozen, and the fimbriated Sundew.

Narcissi were fairly prominent at this meeting. Messrs. Barr and Sons, Ltd., had a tastefully arranged display, which included grand blooms of Beersheba, Empire, Adventure, Polemon, Carmenta, Susette and several choice seedlings under numbers; while Messrs. J. R. Pearson and Sons had grand examples of Tresserve, Nevis, Purity Maiden, Beersheba, Orange Glow, Havelock, Fortune, Tenedos, Kelligrew, Van Waveren's Giant, and others, in their charming exhibit.

Thomas Hay, Advance Guard, Empire, Mary Rose, John Evelyn, Mozart and Kantara, were striking sorts in the display set up by Messrs. R. H. Bath, Ltd.; Messrs. G. W. Miller used choice Narcissi in variety as a background to Primroses, Polyanthuses, Saxifrages and Daisies in variety; while outstanding sorts in Messrs. J. W. Barr's group were Croesus, Danesfield, Madame du Barri, Patricia, Jocelyn and Queen of Beauty.

Among the many grand varieties displayed by Messrs. Herbert Chapman, Ltd., we noticed exceedingly fine blooms of Callirhoe, Chiltern, Marmora, Yukon, Holmdale, Henry Burra and Halfa. A bright golden, unnamed Trumpet variety attracted attention, while also included in this exhibit were several numbered seedlings of grand form and colouring.

Messrs. D. Stewart and Son had a decorative collection which embraced many popular sorts, while Mr. Herbert G. Longford staged a mixed collection of Narcissi and Tulips.

Fruit and Vegetable Committee.

Present: Mr. E. A. Bunyard (in the chair), Mr. C. G. A. Nix, Mr. G. Beckett, Mr. A. Bullock, Mr. W. F. Giles, Mr. F. Jordan, Mr. H. Prince, Mr. F. Bostock, Mr. A. Poupart, Mr. G. F. Tinley, Mr. W. H. Divers, Mr. W. Poupart and Mr. A. N. Rawes, Secretary.

Other than the small exhibit of Apples by Messrs. J. Cheal and Sons, Ltd., this Committee had nothing to consider.

Groups.

The Apples exhibited by Messrs. J. Cheal and Sons, Ltd., were in excellent condition for so late in the season, and included good examples of Wagener, Prince Albert, Ontaria, Dumelow's Seedling, Encore, Crawley Reinette and Beauty of Kent.

INSTOW SPRING FLOWER SHOW.

This show was held on the day originally fixed, as the unusual warmth from March 25 onward brought on everything with a rush, and by early April had converted a season which at the beginning of March was a month late, to an almost normal one.

Each year proves more conclusively the soundness of the idea of a show without prizes, and that, owing to a very broadly drawn schedule and everything being entered in groups, the very best flowers can be produced, and artistically a much better display can be made, than when exhibitors are tied to only three or six blooms of a sort, as must be the case when there is judging on the usual lines.

The show was the eighth of the series, and the very best of all.

Cut Daffodils.—A forty-five feet run of closely packed, three-tier staging held three large and four small groups. The Bulb Farm (Mr. Cobley and Mrs. Snell), Miss Hinchliff and Messrs. Barr and Sons had each about fifty to fifty-five varieties of Daffodils, and the four smaller groups of six to twenty-one—these coming from the Rev. T. Buncombe, Mrs. J. Pike, Mrs. Hinchliff and Mrs. Carbonell.

The Bulb Farm had a magnificent display from a bunch of Fortune downwards, their flowers including Robespierre, Greysteel, Queen of Hearts, Magnolia, Nimrod, Pedro, Harvester, Amber, Heron, Tunis, numbered seedlings, and a wealth of others—a real treat to contemplate.

Miss Hinchliff had Beersheba, Eve, Elinore, Burgomaster Max, Goldbeater, The Perfect Gentleman, Golden King, two good seedlings, Gwendal, Pilgrimage, Golden Pedestal, H. C. Bowles, Elfreda Pearson, Croesus, Donax, Buttercup and two early Poets.

Messrs. Barr and Sons' outstanding feature was two large bunches of unusually fine flowers of Sunrise, associated with John Evelyn, Red Beacon, Tasse d'Or and a host of other good things.

The Rev. T. Buncombe showed Cicely, Eve, etc., but his garden is too high for an early show in a late season.

Greenhouse Groups.—There were five large groups, all good, notwithstanding that many exhibitors had great difficulty in keeping the frost out of their houses in February. Mrs. Lane included some good Pelargoniums; Miss Hinchliff some terra-cotta, brick-red, and blue Cinerarias; Mrs. Hinchliff some very fine Primula obconica, Asparagus and Cinerarias; Mrs. Evatt and Mrs. Critchley showed Azaleas, Primula obconica, etc., and all had some Arums (Richardias) for background.

Bulbs in fibre produced some good Daffodils, Tulips and Hyacinths, particularly those from Mrs. Lane. Flowering shrubs included about ten kinds, shown by Miss White-Atkins and Miss Hinchliff; these included Skimmias, white Ribes, Jews Mallow, Mahonia, Almond, etc.

Primroses were represented by florists' varieties, blue, red, yellow, white, etc., and Hose-in-hose, but the gem was Miss White Atkins seedling form of P. Juliae.

The following plants, among others, were shown:—Iris bucharica, Anemone Pulsatilla, A. ranunculoides, A. coronaria and A. fulgens; Hellebores (varieties of orientalis), blue Hyacinths and Chionodoxa, Triteleia, Grape Hyacinths and Tulips.

Only four sorts of Apples were shown—Blenheim Pippin, Bramley's Seedling, Annie Elizabeth and Newton Wonder.

GLASGOW AND WEST OF SCOTLAND.

Mr. Isaac Fleming, Paisley, presided at the monthly meeting of the Glasgow and West of Scotland Horticultural Society on April 10, when a paper on "Roses" was read by Mr. Tom Baxter, of Messrs. Thomas Smith and Sons, Stranraer.

He dealt chiefly with the merits of the various stocks, and in discussing Rosa canina, which is used universally, he said the reason for its supremacy over all the others was its adaptability to every type of soil and, no matter to what class they belonged, all cultivated Roses thrived on that stock, whether it was used in the seedling or cutting form. The chief points advanced in favour of the Briar as the best stock for Roses were: (1) its fibrous and deep rooting system; (2) its power of imparting to the garden Rose just the right amount of extra vigour required to produce good flowers; and (3) its proved ability to sustain plants over a great number of years.

Commenting on the R. laxa stock, Mr. Baxter admitted that it had good qualities, but very bad faults as well. The roots were described as too strong and coarse and badly lacking in fibre. If a maiden plant on R. laxa stock was compared with one on R. canina, it would be found that the former had a lot of long tap-roots, devoid of the small fibrous feeding roots, while the first thing to be noted in the latter plant was the abundance of fibrous rootlets. He further maintained that Rose trees on R. laxa stocks did not suit all soils when transplanted, and that nearly every exhibitor stipulated that his trees were to be on R. canina stock. R. laxa produced an imposing bush, but it soon lost vigour owing to the lack of fibrous roots. One thing in its favour was that it was easily budded and therefore did not call for the same amount of skill on the part of the propagator.

Mr. Baxter predicted a great future for the Kokulinsky Briar, which combined the good qualities of R. canina and R. laxa.

In the course of the discussion which followed Mr. John Bell pointed out that there were several beautiful parks in Glasgow in which Roses could be grown, but there was not a decent Rose garden in one of them. It was a disgrace that the citizens of Glasgow had to go to Edinburgh to see a Rose garden. Glasgow was the wealthiest city in Scotland and could well afford a Rose garden,—yet the Parks Department did practically nothing in the matter! He suggested that the Society should approach the Corporation on the subject. Sir John Reid said he was glad that Mr. Bell had raised the question, for it had often occurred to him that the most was not made of the public parks in Glasgow.

DEESIDE (ABERDEENSHIRE) FIELD CLUB.

The remarkable progress made by this Club was revealed at the Annual Meeting, held at Blanchory (near Aberdeen) on April 13, and presided over by the Marquis of Aberdeen and Temair. The Secretary, reviewing the work of the Club during 1928, said that six excursions had been held, and during one of them they opened new ground for the first time in their history; they visited that part of the Mearns district that lay beyond the Mount, which is outside the Deeside Valley. This innovation was heartily approved. The membership is still maintained at the limit, with a waiting list of some thirty or forty, and comprises twenty-three honorary members, thirty life members, and 432 ordinary members. The Treasurer, in his report, said they started 1928 with a balance of £91 10s. 0d.: the members' subscriptions, amounting to £119 18s. 0d., were the highest ever paid. The year closed with a balance in hand of £124 4s. 9d., which was considered highly satisfactory. Warm tribute was paid to the Club's publication, the *Deeside Field*, the Secretary stating that from the beginning, to the present time, the total receipts for the four numbers were £1,000. Arrangements were made for a fifth number to be published at the end of 1930. Lord Aberdeen suggested that the unwearying services of Mr. Bentley Philip, the Secretary of the Club and Editor of the *Deeside Field*, should be publicly recognised by the presentation of some gift. This was warmly agreed to.

Dr. Bremner, Aberdeen, reporting on the work of the Club's photographic survey of the valley of the Dee, said it was developing along well directed lines. The enlarged photographs displayed of Deeside vegetation and scenery illustrated the progress made by the survey.

Dr. Douglas Simpson, Librarian of Aberdeen University, reported that the ruins of Kindrochit Castle, supposed to be the oldest in Scotland, had now been placed in a reasonably sound condition, after much excavation work. The office-bearers were re-elected.

ROYAL CALEDONIAN HORTICULTURAL.

"Spraying for Insect Pests and Fungus Diseases" formed the subject of a paper written by Mr. Charles Webster, Gordon Castle Gardens, and read in his absence by Mr. Ames, of the North of Scotland Agricultural College, Aberdeen, at a meeting of the above Society held at Edinburgh quite recently, under the presidency of Mr. J. T. Jeffrey.

The spraying of fruit trees for insect pests and fungus diseases, Mr. Webster stated, is now looked upon as part of the general routine of garden work, and although great strides have been made in recent years with the treatment for their control, the opinion was general that plant pests and diseases are still on the increase.

Some seasons, no doubt, favoured the increase of certain insects more than others, and the same applied to fungus diseases, but no matter what the season might be, wet or dry, it was certain to be favourable to the spread of some of these troubles. To the gardener it was becoming a serious problem to carry out the work of spraying the trees and bushes at the proper time and, if one had to wait for calm and suitable weather, it was doubtful if all the spraying would be done in season. Whatever type of machine was used, it was important that it should be powerful enough to force the spray to all parts of the tree and to reach the tops of the highest garden walls.

Discussing the treatment of individual fruits, the writer suggested that the winter washing of Apricots should start about the end of October, when the leaves begin to show signs of ripening. Of the various insects attacking Apricots, brown scale is the worst, and where the trees were badly infested, it repaid the labour to have them unfastened from the walls and hand-washed, rubbing the shoots between finger and thumb, as spraying in such cases had no deadly effect. At the same time, opportunity should be taken to spray the crevices in the wall with a strong solution of lime-sulphur. The fruit buds of Apricots, Peaches and Plums are more tender than those of most fruits, and spraying in springtime should therefore be done before any signs of growth are apparent. If spraying has to be done late, "Orchard Spray Fluid" is preferable to lime-sulphur or tar distillates.

Outside-grown Peaches are subject to nearly all the worst insect and fungus troubles which fruit growers have to contend with, and it is doubtful if the crop is worth the labour bestowed on it. Their place might be more profitably taken by other fruits which would give a better return. Winter spraying, no doubt, assisted in keeping the insects in check, but never cleared them out entirely. By spraying again just before the blossom opens with quassia extract or "Orchard Spray Fluid," and again so soon as the fruits have set, the aphis may be got rid of for the rest of the season. To keep red spider in check the trees require syringing with tepid water both morning and evening for a week or more. Leaf blister is not easily controlled, but if the trees are sprayed with Medila before they come into flower, it acts as a check; picking off the affected leaves will also prevent this disease spreading.

Of all hardy fruits which suffer from insects and diseases of one sort or another, the Apple has more than its share. Among the worst of the insects to get rid of is the woolly aphis, and when once established on old trees it would be more profitable to destroy the trees and replant with clean, healthy stock. Capsid bug is another insect which causes a lot of trouble in some districts. It attacks both the fruits and the young, vigorous shoots, completely paralysing all growth for a season and rendering the crop worthless. Spraying with lime-sulphur or tar-mixtures during the dormant season is beneficial, but no matter how carefully the work is done, there are always plenty of bugs left to breed again. Another spraying in April with "Orchard Spray Fluid," just before the buds open, is recommended, as by that time the bugs, so well as other pests—codlin and tortrix moths—will have hatched out and are more easily got at. Spraying with Bordeaux mixture for black scab, so soon as the fruits are set, assists in securing a cleaner crop, but this spray should not be applied in too concentrated a form, as it may cause a big proportion of the fruits to drop, and leave a rusty appearance on the remainder. As Bordeaux mixture and lime-sulphur have had no effect on checking leaf scorch, which seems to have spread during recent years, top-dressing with sulphate of potash is now being tried.

Nearly all varieties of Apple are subject to canker, especially James Grieve and Warner's King. By cutting away the affected parts and painting over the wound with a mixture of tar and clay (one part tar to four parts clay, mixed with water to the consistency of paint) it should heal over, but the trouble usually breaks out in some other part of the tree. Canker is most prevalent on damp, heavy soils, which suggests that imperfectly ripened wood is partly the cause of the disease, as it is seldom found on wall or pot trees, where the growths have a better chance of maturing.

The Apple fruit miner appeared suddenly in July, 1926, and caused serious havoc in gardens along the Moray Firth coast. It was almost impossible to find a sound Apple, and it was certainly the most serious insect pest of that season. There has been no further outbreak and the pest seems to have disappeared as mysteriously as it came.

Green aphis favours the Plum, and black Aphis the Cherry. At the first appearance of either, the trees should be sprayed with quassia or Katakilla. Spraying has not much effect upon brown rot or wither tip fungus, and the best way to prevent it spreading is to cut out all the affected shoots and burn them. Only by hand washing can mussel scale be kept under control. Silver-leaf fungus has not yet reached the Plum trees at Gordon Castle.

Bordeaux mixture assists in keeping scab on Pear trees in check, and lime-sulphur applied before the buds come into flower, combined with picking-off the badly affected leaves, keeps down blister mite. Scraping the surface soil from the bottom of the wall and around the stem, and giving a dressing of two ounces sulphate of potash to the square yard, is also helpful. It is different with the Pear sucker, undoubtedly the worst of the pests which trouble this fruit. If it does not receive necessary attention at the proper time the leaves drop prematurely, weakening the fruit buds for another season and also checking the swelling of the fruits. Fortunately, it is not difficult to keep under, provided the trees are sprayed with quassia or "Orchard Spray Fluid." Should the season be hot and dry, a second spraying may be required about the end of July.

Black Currant mite can be partially checked by using lime-sulphur just as the buds are bursting into leaf; and by repeating the application three times at weekly intervals, the mites can be kept from spreading. Where reversion or Nettle-leaf makes its appearance, the bushes should be destroyed.

Of the different sprays used to check Gooseberry mildew, a solution composed of 1 lb. washing soda and two ounces of soft soap to four gallons of water gives the most successful results. By shortening the young shoots so soon as the mildew makes its appearance, and spraying with soda mixture, repeating the operation in ten days, the bushes may be kept clear of this disease.

The Strawberry is causing considerable trouble at the present time. At Gordon Castle, fresh ground, which had not been in cultivation for fifty years, was tried. Clean, healthy stocks were planted, yet, in the course of four years, the plants went off in the same way as previously.

Of late years there seems to be something wrong with certain varieties of Raspberries. Superlative, Pyne's Royal and Devon, which grew freely at one time, were now dying out. Specimens of Lloyd George growing alongside these other sorts show no signs of weakness, although all are treated alike.

A long and interesting discussion followed, many members giving their views and experiences in the control of the numerous pests and diseases.

Mr. Chisholm, of the College of Agriculture, Edinburgh, referring to the capsid bug, stated that so far no reports of its presence had been received from the twelve counties comprising the south-east district of Scotland, but most of the pests mentioned by Mr. Webster were to be met with all over the country. He emphasised the value of the soda formula for American Gooseberry mildew, and gave it as his opinion that if the bushes were sprayed in the middle of May, and again in the first week of June, a clean crop would be obtained that season. A lime-sulphur spray in spring might not eliminate big bud on Black Currant bushes, but that treatment could control the pest and would enable gardeners to grow a good crop of fruits every year. Absence of potash in the soil produced a weak type of foliage and soft, poorly-ripened wood, which rendered fruit trees liable to leaf-scorch. He believed in building up the constitution of the trees by proper feeding, and planting suitable varieties that offered resistance to the disease. Spraying was excellent up to a point, but it was not sufficient in itself if manuring was defective. Silver-leaf was a scheduled disease and, as spraying had little effect, the best plan was to dig up the affected trees and burn them. If only a branch was affected it should be cut off to prevent the disease from spreading, and he advised that no dead branches should be allowed to remain in the orchard, and thus afford fruiting ground for the fungus.

Mr. J. H. Alexander remarked that the audience was not to infer from Mr. Webster's paper that he experienced a great amount of disease and got very little fruits; the conditions at Gordon Castle were the reverse. On the motion of Mr. William Cuthbertson, a vote of thanks was accorded to Mr. Webster.

Obituary.

William John Jefferies.—Another of the older generation of nurserymen has passed away in the person of Mr. W. J. Jefferies, head of the firm of Messrs. John Jefferies and Son, Ltd., Cirencester. The deceased gentleman had a thorough knowledge of the business he conducted so ably and extended considerably. He was better known personally to the older gardeners and members of the trade than to the present generation, and in former years he was a regular attendant at the meetings of the Royal Horticultural Society, the National Rose Society, and the Horticultural Club. Forest and ornamental trees and Roses greatly interested him and received his personal attention for many years. His activity was amazing, and until the weight of advancing years pressed heavily upon him, he visited every part of the nurseries almost daily, formerly on horseback, latterly in a motor-car. Mr. W. J. Jefferies was highly respected for his personal qualities and his business ability, and for one period he was President of the Horticultural Trades Association. He passed away at Cirencester on Sunday, April 14, having reached the advanced age of eighty-five years. The business will be continued by Mr. E. A. Jefferies, a nephew, who has been associated for many years with his uncle in its management. A portrait and appreciation of Mr. W. J. Jefferies appeared in *The Gardeners' Chronicle* of October 10, 1925.

ANSWERS TO CORRESPONDENTS.

Peach Leaves Unhealthy. — *W. H.* No fungus was found on the Peach leaves sent for examination, and we have come to the conclusion it is a complaint commonly known as "the yellows." Excesses of cold or moisture, either in the earth or in the air, are the most common causes of this condition. Over-deep planting, unsuitable stocks, a sudden spell of very hot weather after a season of cold, may also result in the trouble. The first sign of its presence is a diminution in the green colouring of the leaves, and later a more or less premature ripening of the fruits. Trees on Plum stocks are less liable to attack than those worked on the Peach stock. Is there plenty of lime in the soil? Give a dressing of chalk to the border next autumn, 3 lbs. to the square yard, broken up into small pieces. Another remedy which may be tried now is to remove a little of the surface soil, and dissolve ¾-lb. of sulphate of iron in water, and apply at the rate of ¼ oz. to five pints of water. See that the roots of the tree are fairly moist before applying this, and wash it well in with clear water.

Names of Plants.—*W. C.* 1, Acacia armata; 2, Cupressus thuyoides.

Communications Received.—L. V. D.—A. T. J.—F. W. G.—D. E. H.—J. B.—H. G. M.—G. R. B.—A. C. B.—J. C.—A. S. W.—F. J.—J. B.

THE
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CONTENTS.

Alpine garden—
  Gentiana verna ... 326
  Saxifraga Petraschii 326
  Synthyris reniformis 326
Bog and water garden—
  Cardamines ... 327
Book, notice of—
  Annuals 330
British Science Guild... 320
Coconut, the double ... 320
East Malling Research Station 320
Edinburgh, notes from 331
Frost damage to horticultural crops ... 332
Fruit blossoms, order of flowering and pollenation of ... 332
Garden manures for May 333
Hardy flower border—
  Veronicas, herbaceous 324
Indoor plants—
  Aphelandra tetragona 324
  Celosia plumosa ... 324
International Agricultural Institute ... 320
Kenwood, birds at ... 320
Kew, Royal Botanic Gardens, work of the, during 1928 ... 319
Logan 329
Obituary—
  Carles, William B.... 338
  Hunter, John M. ... 338
  Ridgway, Dr. Robert 338
Pathfinder, memorial to 320
Plants new or noteworthy—
  Astragalus utahensis 327
  Caltha palustris var. alba 327
  Mertensia moltkioides 327
  Trollius acaulis ... 327
Primula, the genus ... 326
Rhododendron campylocarpum 319
Rhododendron, Chinese, at Kew... ... 321
Royal Botanical and Horticultural Society of Manchester ... 320
Royal Horticultural Society : Accounts, of the, 334; New Hall, award to ... 319
Societies—
  Cornwall Spring Show 336
  Manchester and North of England Orchid 338
  Midland Daffodil ... 334
  National Primula and Auricula ... 337
  Professional Gardeners' 336
  Rhododendron ... 337
  Wakefield Paxton... 337
Soil sterilisation, partial 334
Strawberry plants, inspection and certification of 321
Studley College Flower Show 320
Thorburn, Grant ... 328
Trees and shrubs—
  Berberidopsis corallina 324
  Daphne Mezereum... 325
  Erica mediterranea 325
  Olearias 325
  Rosmarinus officinalis var. prostratus ... 325
  Salix Bockii ... 325
Week's work, the ... 322
Winter, the aftermath of 319

ILLUSTRATIONS.

Astragalus utahensis 321
Logan, views of 327, 328, 329, 331
Mertensia moltkioides 323
Tulips, Messrs. Sutton and Sons' Gold Medal Exhibit of 335
Thorburn, Grant 320

COLOURED SUPPLEMENT PLATE.

Rhododendron campylocarpum.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 51·0°.

ACTUAL TEMPERATURE—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, May 1, 10 a.m. (Greenwich time). Bar. 29·9. Temp. 46° Weather, Overcast.

The Aftermath of Winter.

THE past winter—if past it yet be—gathered into its frigid bosom an ample harvest of garden plants. It exhibited rigour and caprice with evenhandedness. "Whom it would it slew, and whom it would it kept alive." Of plants of the same species and age growing side by side, one was taken and the other left. Thus, with Senecio Greyii, of which many specimens grow and flourish in the garden in which these observations are made, one well-grown plant, planted in a pocket in a wall, is shrivelled, discoloured, and apparently lifeless, and its fellow a yard away, which never grew so well and lagged a long way behind, is unscathed. Near-by are two large specimens of Olearia macrodonta, one stands on ground a few feet higher than that on which the other is planted. The lower plant is seared and unsightly, the higher spruce and fresh as though no winter had assailed it. Cistuses have suffered in like sporadic manner. On a bank facing southward, C. corbariensis and C. crispus are untouched, but in another part of the garden, with fuller exposure to the sun, both have been badly "burned" by the frost. The hybrid Cistus Silver Pink is, or seems, dead. C. ladaniferus is unharmed, but C. villosus, which looks a hardy thing, has not come off scot free. Muehlenbeckia complexa, certified as hardy by Nicholson, may presently show some sign of life, but up till now it looks as dead as dead can be. Lonicera nitida, of which this garden grows long hedges, has not been touched by winter; and all but untouched is along, double hedge of the Jerusalem Sage (Phlomis fructicosa), that wide-spreading, straggly, but strangely attractive plant. It was Mr. Baker, Superintendent of the Botanic Gardens, Oxford, who suggested that we should try this subject as a hedge plant. Greatly daring, we did, and this winter has proved that it will do. Yet, although the plants of the hedge are well enough, a single specimen sheltered by the house, but in a draughty corner, has gone completely black. It will get grey again, no doubt, but the wind has hurt it sorely, Photinia arbutifolia, Bupleurum fructicosum, and Garrya elliptica, have all suffered, albeit the two former much less severely than the last-named. The swift destruction that an ill-timed frost may exercise was well shown by Rhododendron praecox. Never had it flowered better or later. The severe April frost changed in a night the glowing pink or mauvish-pink blooms to a brown, soggy mass. Yet close by, Magnolia stellata had its already open flowers but lightly browned, and its buds uninjured, so that next day the bush was arrayed in pure white again. Desfontainea Hookerii, a little specimen, has remained unharmed. Of groundlings and rock plants we will write but little, although it is worth mentioning that, whereas a good many Primulas seem to have suffered, P. marginata on an exposed bank, if judged by its bright and prosperous aspect, must have enjoyed the winter. The cold and wind played strange tricks with spring flowers. Prunus Davidiana blossomed nearly two months behind its time and then perfunctorily; P. Pissardii, a planted walk of which is the spring glory of this garden, struggled through a slight and belated flowering while its leaves were opening out. Plums, either from frost or last year's heaviness of crop, are no less penurious of flower. The same sharp April frost which destroyed the beauty of Rhododendron praecox arrested the Pear bloom in the bud stage so effectively that it is at least doubtful whether the buds will ever open; yet the buds on the Apple trees, less advanced and hardier, suffered not at all. Spartium junceum has its spiky shoots all turned straw colour. Cytisus scoparius var. Andreanus, hardy enough, looks all black, but C. Dallimorei, old and gnarled, seems very happy and will, no doubt, go on as it has for many years now, flowering profusely and growing scarcely at all. Berberises look generally very bedraggled, B. canadensis worst of all, and B. Wilsonae the least. Rarely, if ever, have gardens shown such a dishevelled appearance as after this late winter, but although spring tarries, plants cannot help but come out like heralds to welcome it. Gradually a welcome greenness steals over the garden, obliterating at least the sharp severity of the losses which it and we have sustained. But although the garden has suffered, the soil has benefited by the severe winter. Ground of heavy nature dug in autumn is now pulverised, and in the lower part of the garden here described the subsoil clay for three spits down, brought up last July to the surface in the form of great, greasy clods, is now fined down to a perfect tilth good enough for the growing of Onions. Two feet down, where the spade reached, may be seen the fissures and fragmentation due to the penetrating frost. If rain comes before it is too late to be of real value, we should have a great garden summer.

Our Supplement Plate.—As our Supplement Plate to this issue we have pleasure in presenting a coloured illustration of the beautiful Rhododendron campylocarpum. Although not new to cultivation—it was introduced into this country from the Himalayas in 1851—R. campylocarpum is by no means common in gardens, chiefly because it is only in the warmest parts of the country that it can be grown with any real prospect of longevity, although it is reported to have survived in the Rhododendron Dell at Kew for twenty years. It is evergreen, and may be regarded as the best of the yellow-flowered species. In height it will attain from six to ten feet, while its flowers, with bell-shaped corollas nearly three inches across, are fragrant, and borne in loose, terminal clusters of six to eight.

Award to the R.H.S. New Hall.—We learn that the medal given annually by the Royal Institute of British Architects for a building completed within the County of London during the last three years, has been awarded to the Royal Horticultural Society's New Hall, the architects of which were Messrs. J. Murray Easton and Howard Robertson.

The Work of the Royal Botanic Gardens, Kew, during 1928.—Those who are interested in the development of the Royal Botanic Gardens, Kew, will read with pleasure the recently issued Appendix I, 1929, of the Kew *Bulletin of Miscellaneous Information*, which contains a review of the work of the Gardens during 1928. An account of the tour by Dr. Hill, the Director, in Australia and Tasmania, Malaya and Ceylon, also of his visit to Java and the Botanic Gardens, Buitenzorg, are given, and there are also short reports of missions undertaken by other members of the Kew staff during 1928. Last year, 1,127,003 persons visited the Gardens, an increase of 48,915 on the figures of the preceding year. In May, the attendance numbered 229,210, the highest monthly total for the year: the lowest was in December, with 6,564. The highest daily attendance was on Whit Monday, May 28, when there were 53,661 visitors, while the lowest was seven, on December 18. The work of the various departments is recorded, together with the developments and plant losses that have taken place. Among interesting plants which flowered at Kew during 1928 are Luculia Pinciana, in the Mexican section of the Temperate House, during December; Baikiaea insignis, which flowered at Kew for the first time in July, 1914, and has done so several times since, but never so freely as it did last year (in the Aroid House, No. 1); Agave americana and A. Ixtli, the latter being one of the Mexican fibre-producing species of value, and its loss consequent to flowering will be felt; and Thea (Camellia) speciosa, from Yunnan, China, which flowered quite freely at the latter end of the year. Several interesting South African plants in the collection obtained through the kindness of Captain Collingwood Ingram, flowered last year, including Monsonia speciosa and Kniphofia Galpinii, the latter being a species quite new to cultivation. The total rainfall at Kew for the year was 26·44 inches, 6·77 inches below that of 1927. The publication contains a list of the numerous contributions to the Gardens in 1928; one of the most valuable was the gift of over 3,000 bulbs of named Daffodils for planting in grass, by the Donard Nursery Company, and special acknowledgment is made to Major Lionel de Rothschild for his generosity to the establishment. The issue also contains an account of the year's happenings at the National Pinetum at Bedgebury, and of the work carried out in the Museums, the Jodrell Laboratory, and the Herbarium, and it concludes by recording the extensive additions, received as presentations, to the Library.

The Double Coconut.—An interesting account of the introduction of the Double Coconut, Lodoicea Callipyge (L. sechellarum) into the Botanic Gardens of British Guiana, is given by Mr. Abraham, the Assistant Superintendent of the Gardens, in the December, 1928, *Agricultural Journal* of British Guiana. After several fruitless attempts to germinate seeds imported from the Seychelles, success was achieved in 1892 when, from twelve nuts, two females and one male plant were raised. The female flowered after fourteen years and the male in 1908—two years later. The Palms were practically stemless when they produced their first inflorescences. Now, at the age of thirty-five years, the females have stems two feet high, and the male overtops them by fully half-a-foot. Needless to say, what these Palms lack in stem they make up in leafage; for, as the photograph accompanying Mr. Abraham's article shows, the Palms have numbers of huge, fan-shaped leaves.

New Horticultural Instructor for Buckinghamshire.—Mr. Alan E. B. Langman, Horticultural Lecturer at the Cheshire School of Agriculture, Reaseheath, Nantwich, has been appointed to succeed Mr. Philip Mann—recently retired—as Horticultural Lecturer and Adviser for Buckinghamshire.

British Science Guild.—At a public meeting, held at the Mansion House on Wednesday, April 24, under the auspices of the British Science Guild, dealing with developments of British chemical manufacturers, Sir Frederick Keeble, C.B.E., F.R.S., spoke on a subject of great interest to horticulturists, namely, "Fertilisers from the Air." After briefly sketching the methods adopted in nature to convert atmospheric nitrogen into a form capable of assimilation by plants, the speaker turned to the question of the fixation of nitrogen and artificial fertilisers obtained by this means. He stated that Belgium and Holland consumed larger amounts of these fertilisers per acre than any other countries. In England, the consumption showed little increase during recent years, the value of nitrogenous manures not, apparently, being appreciated to the extent that the wonderful results obtainable by their aid justified. We shall deal in greater detail with the subject of Sir Frederick Keeble's speech in the near future. Interesting addresses were also given by Messrs. A. B. Shearer, F.T.I., and Francis H. Carr, C.B.E., dealing respectively with "Rayon (Artificial Silk)" and "Synthetic Drugs."

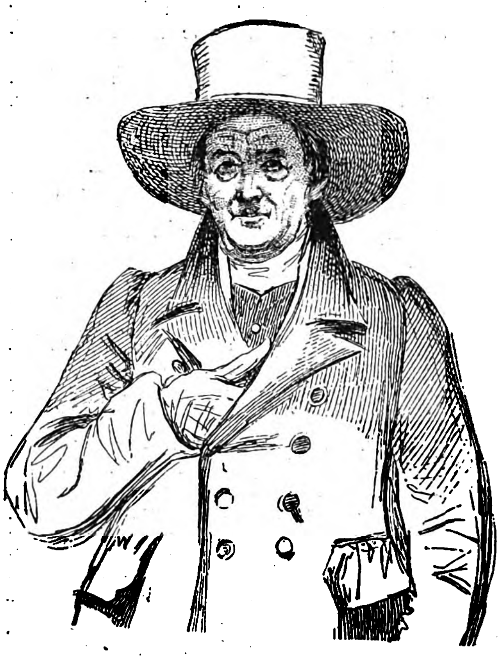
Birds at Kenwood.—A correspondent, writing in the *Daily Telegraph* of April 27, states that for many years several pairs of reed warblers nested regularly in the bushes in one of the ponds in Golders Green Park, but that during the war an over-zealous official cleared out the rushes from the pond, since when he had not seen the reed warblers there. Several species of birds which had temporarily left Kenwood have returned to nest there. The yellow wagtail and the coots nest there now, and two summers ago a pair of little grebes hatched out two young ones, but did not rear them. A few weeks ago a reed bunting was seen in Kenwood, a species which formerly nested there and may return.

French Vineries to be Restored.—One of the sons of the well-known vine-grower of northern France, M. Anatole Cordonnier, has taken in hand the reconstruction of the once-famous "Grapperies du Nord," under the title of "Grapperies de Bailleul." In a few weeks' time the first group of houses will be ready for occupation, and it is thought that the enterprise will recover all its former prosperity.

Plant Export by Ferry to Belgium.—By a recent decree, the Customs at Zeebrugge, Belgium, are now prepared to admit of the importation into that port, by train-ferry, of living plants other than Vines. The advantage of this mode of transport for perishable goods is obvious, as it avoids a considerable amount of handling which would otherwise be necessary. For instance, eggs, fruits, vegetables, plants, etc., which are sent by ferry from Belgium, are placed in sealed wagons at the point of departure and are only opened by the Customs authorities on arrival in London. The train runs on to the ferry at Zeebrugge, and from the ferry on to the Great Eastern lines at Harwich, whence it leaves immediately for Liverpool Street.

Linnean Society's Anniversary Dinner.—Sir Sidney F. Harmer, F.R.S., President, will preside at the Anniversary Dinner of the Linnean Society at the Criterion Restaurant, Piccadilly Circus, on Friday, May 24, 1929, at 7.15 p.m. Fellows and Associates may invite friends, and must obtain tickets for the Dinner, price 8s. 6d. each (exclusive of wine), from the Assistant Secretary, Burlington House, Piccadilly, W.1., not later than Tuesday, May 21.

International Agricultural Institute.—On April 10 and succeeding days, a Conference was held in Rome, at the International Agricultural Institute. No fewer than eighty-four delegates were present, representing over forty different countries, including England. The subject of international phytopathological problems was fully discussed, but it is apparently very difficult to obtain agreement on questions of quarantine and import regulations in the various countries, which at present make and enforce their own laws according to their own particular circumstances. A resolution was, however, agreed upon to the effect that in cases of difficulties arising between one country and another in the application of import regulations, or doubt as to the underlying reasons for the creation of barriers to free importation of plants, recourse should be had to the Institute for arbitration purposes. After the close of the Conference, the delegates were entertained to a reception by the President of the Institute, M. de Mechelis, and his wife.



GRANT THORBURN.

(see p. 328.)

The Studley College Flower Show.—The show and sale of produce in aid of the Studley College Appeal Fund, held on April 25, was good from a decorative point of view, although we wonder whether, financially, it was a success. The large majority of the nurserymen who had exhibits at the R.H.S. meeting on the two previous days, left their groups intact, and these constituted the bulk of the display, supplemented by numerous stalls of flowers and dairy produce for sale, together with exhibits demonstrating work done at Studley College. Princess Mary, Viscountess Lascelles, opened the show a few minutes after 12 o'clock, and at that time there was a fair attendance, but throughout the afternoon the number of visitors was disappointingly small, although this had no diminishing effect on the vigour with which the numerous saleswomen plied their wares.

Memorial to "Pathfinder."—The late Mr. Edmund S. Taylor, known as "Walker Miles" and "Pathfinder," was well-known to those many ramblers who love the by-ways of the countryside rather than the highways. He had a genius for finding out and describing tracks that led through beautiful country or led to charming views, and his directions and descriptions were embodied in a series of booklets. To perpetuate his memory, a memorial has been placed on the top of Leith Hill, Surrey, and it takes the form of four bronze view indicators on the tower. Through the generosity of Mr. J. Andrews, Leith Hill is now the possession of the nation, and he was present on a recent Saturday when three hundred "ramblers" met to see the memorial duly dedicated by Lord Farrer, and handed over to Mr. H. W. Vaughan Williams, who accepted it on behalf of the National Trust.

Members' Day at East Malling Research Station.—A large number of Associate Members were present on the occasion of the Annual Meeting and Gathering at the East Malling Research Station, Kent, on April 30, and a very pleasant day was spent inspecting the valuable experimental work that is being carried out. The only flaw to the full enjoyment of the visit was the absence of Mr. Ronald G. Hatton, the genius directing the work at East Malling, who was unwell, and many expressions of sympathy were conveyed to him through Dr. R. C. Knight, the Assistant Director, who proved an admirable substitute. The Annual Meeting was held in the morning, and was presided over by Mr. P. Manwaring, an ardent supporter of the Institute. Both the Annual Report, a splendid and very useful publication in itself, and the Balance Sheet, were adopted, with no other comments than of praise and satisfaction. At 12.45 p.m., the large gathering partook of an excellent luncheon, which was terminated by speeches by Major Walter Elliot, M.P., Under-Secretary of State for Scotland, and Chairman of the Research Department of the Empire Marketing Board, who spoke enthusiastically of the great value of the scientific work in progress at East Malling, not only to fruit farmers in Kent, but to agriculturists in general throughout the Empire, and promised the station the Board's continued support; Sir George Loyd Courthope, Commander Bellairs, M.P., for Maidstone, and the Rt. Hon. Lord Cornwallis of Linton, who has long been keenly interested in the development and work of the station. Previous to these speeches, Mr. Manwaring, who presided, briefly outlined the history of the Institute which, since the war, has grown and developed rapidly, and at the conclusion he issued an appeal for assistance in establishing an Endowment Fund. After luncheon, the members divided into three parties and were conducted round the plantations and laboratories by members of the staff. The pruning and rootstock experiments proved extremely interesting, as also did the spraying demonstration with two high-power machines—the demonstration was of spraying with lime-sulphur wash (one in thirty, with gelatine as a spreader, at the pre-blossom stage). The Plum, Pear, Black Currant and Gooseberry plantations were visited, and the inspection of the work now being carried out in the laboratory, especially in the Entomological and Mycological sections, proved very instructional, especially to commercial fruit-growers. All the members must have left in the evening, after such an enjoyable day, with the feeling that, at East Malling at least, work of real value to the fruit-growing industry is being carried out.

The Royal Botanical and Horticultural Society of Manchester and the Northern Counties.—After a lapse of nearly fourteen years, this Society has again come to the fore, its re-awakening being marked by a very successful Spring Flower Show, held in the Organ Chamber of the Manchester Town Hall, on April 18 and 19. The show is described as a "feeler," to discover whether or not Manchester has sufficient flower-lovers to justify resumption of activities on the part of this, we suspect, particularly wealthy Society; if the spring show is regarded as a success, another vigorous effort will be made to re-establish the city as a horticultural centre. The quality of the exhibits at the show was surprisingly good in view of the extraordinary weather that has prevailed, and the trade was admirably represented. Spring flowers were, of course, most in evidence, but there were also several good collections of Orchids, and also a fine display of Hippeastrums. Allen C. Roy, Esq. (gr. Mr. Falconer), Cheadle Royal, was first in the class for a group of spring-flowering plants; Messrs. Backhouse (York), Ltd., staged the best alpine exhibit; and J. B. Adamson, Esq., Blackpool, the best collection of Orchids.

Chinese Rhododendrons at Kew.—A few of the newer Rhododendrons introduced from China and Tibet are on the borderland of hardiness. A considerable number flower and commence to grow during mild intervals in early spring, consequently the value of a cool, or unheated greenhouse, such as the new annexe to the Temperate House at Kew, has been very fully shown during the past winter. In the outdoor garden there are many losses among Rhododendron plants, and especially among flower buds, but planted out in the borders of the new house there is quite a different tale to relate. A few of the most noteworthy are R. coriaceum (Forrest 16,364), white with crimson markings, belonging to the 'Falconeri' series, from south-eastern Tibet; R. Morii, blush-pink (Wilson, 10,955), from Formosa, 'Irroratum' series; R. neriiflorum, deep blood-crimson, the type of a series, first introduced by Forrest from the Tali range in 1906; R. aureum, a dainty, small-flowered, rich yellow species, first introduced by Forrest in 1906, 'Campylogynum' series; R. bullatum, a very free-flowered, small plant with large, white blossoms, from north-west Yunnan, 'Edgeworthii' series; R. stenoplastum, blush-pink, with crimson markings, from western Yunnan (Forrest 17,920), 'Heliolepis' series; R. stereophyllum, white, from Yunnan, 'Triflorum' series; R. Davidsonianum, white, tinted rose, introduced by Wilson in 1903 from west Szechuan, 'Triflorum' series; R. floccigerum, a very pretty, cerise-red shade, from north west Yunnan, 'Neriiflorum' series; R. mollicomum, resembling R. racemosum, but with very hairy stems and leaves and pale rose flowers, from Yunnan, introduced by Forrest in 1913; R. Schlippenbachii, a very beautiful pink-flowered Azalea from Korea; and R. Weyrickii, with attractive brick-red flowers, also from Korea. Perhaps the most interesting plant in the house at the time of writing is a new species—Forrest 21,706—a dwarf bush covered with rich rose-pink blossoms.

Retirement of Mr. H. Dunkin.—After twenty-eight years' service as Horticultural Adviser and Organiser to the Warwickshire County Council, Mr. H. Dunkin is retiring on May 31, next.

One Hundred Years Ago. — The following quaint advertisement is culled from the *Aberdeen Journal* of April 29, 1829. Modest and unpretentious the exhibition may have been, but it proves how thoroughly alive, even in those far-off days, our gardeners were to the benefits of co-operation, fraternity and comparing of notes :—"Aberdeenshire Horticultural Society.—The First Competition of the Society for the year will be held in the Hall of the New Inn on Tuesday, the 5th of May. The articles for competition are :—3 pots stage Auriculas; 3 pots seedling Auriculas; 3 pots of Polyanthuses; 3 pots of seedling Polyanthuses; 3 Hyacinths; 12 Mushrooms; 25 Heads of Asparagus; 3 heads of Broccoli; a brace of Cucumbers; 12 dessert Apples; 6 heads of Sea Cale; and for 3 quart bottles (each) home-made wine, from fruit or vegetables, either single or combined, the growth of the counties of Aberdeen, Kincardine or Banff, without the assistance of any foreign ingredients but sugar."

Inspection and Certification of Strawberry Plants.—The Ministry of Agriculture and Fisheries is prepared to accept applications for the inspection of stocks of the following varieties of Strawberry plants with a view to their certification if found to be true to type and reasonably free from rogues :—Bedford Champion, Jucunda (Amazone), Leader (Kentish Favourite), Madame Kooi (Princess Juliana), Madame Lefebvre, Oberschlesien, Royal Sovereign (Laxton's King George V.), Sir Joseph Paxton, Stirling Castle (Garibaldi), The Duke and The Laxton. The certificates which may be obtained are of two kinds: (*a*) "Ordinary" and (*b*) "Super" certificates, the latter being issued in cases where a prescribed limitation of runners is practised by the grower. The fees payable for inspections are at the rate of 10s. per acre or part of an acre on application for an "Ordinary" certificate, and 15s. per acre or part of an acre on application for a "Super" certificate. Full details can be obtained from the Ministry. Growers wishing to participate in the scheme should bear in mind that applications for inspection must reach the Ministry not later than May 31, 1929; applications cannot be accepted after that date.

Legacies to Gardeners. — Mr. Alfred Hobson, of Redcliffe, Dawlish, Devonshire, who died on February 9, left £1,000 to his Gardener, Mr. Sydney P. Brown, and £200 and £50, respectively, to Mr. Leonard Ash and Mr. Fred. Stevens, under-gardeners, if in his service at the time of his death.—Under the will of the late Mr. W. G. Welch, of Hampson, Galgate, near Lancaster, who died on January 2, Mr. W. Miles Whittingham, his gardener, receives £200, and £1 a week.

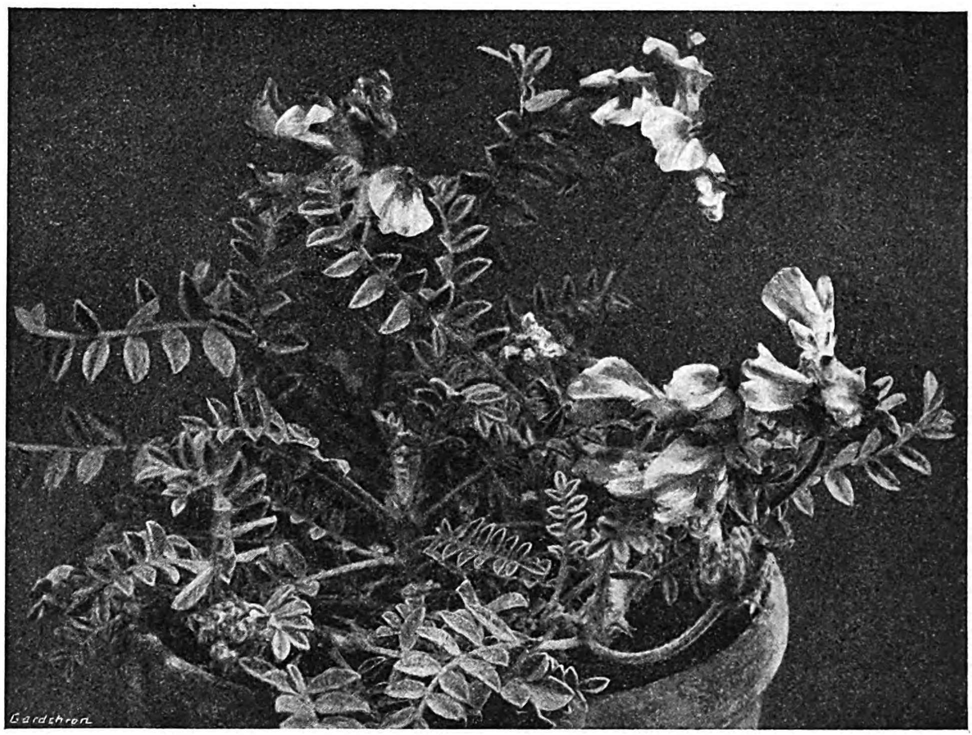


FIG. 160.—ASTRAGALUS UTAHENSIS.

R.H.S. Award of Merit, April 23. Flowers rose-purple; leaves silvery. Shown by C. T. Musgrave, Esq., Hascombe Place, Godalming. (see pp. 316 and 327.)

Moreton Paddox Gardens.—By the kindness of the owners, Captain and The Hon. Mrs. Carlano Emmet, the gardens at Moreton Paddox, near Warwick, will be open to the public this year on Sunday, May 5. The wild garden with its grottos, pools and shrubs, planted and arranged by Major Robert Emmet, D.S.O., father of the present owner, is particularly beautiful this year, and those who are able should not miss this opportunity of visiting the gardens, which will be open under the scheme organised, as in 1928, by the Queen's Institute of District Nursing.

Appointments for the Ensuing Week.—MONDAY, MAY 6: Harrogate and District Horticultural Association's meeting. TUESDAY, MAY 7: Royal Horticultural Society's Committees meet (two days); Royal Caledonian Horticultural Society's meeting. WEDNESDAY, MAY 8: Sheffield Chrysanthemum Society's lecture. FRIDAY, MAY 10: Royal Horticultural and Arboricultural Society of Ireland's meeting. SATURDAY, MAY 11: Leeds Paxton Society's Tulip Show.

"Gardeners' Chronicle" Seventy-five Years Ago.—*How to obtain Potatos free from Disease.*—I have been successful in producing sound crops by the following course of culture: I procure as early and good kinds of Potatos for sets as I can get, omitting all the very latest varieties. My next object is to plant so that the crop can be properly protected and saved from blight when the tubers are grown; I therefore grow my Potatos in beds, which I find to yield the heaviest and finest crops. The sets, which are cut, are sprouted on the hard floor of some sheltered shed, where they can have plenty of air and light. Here I cover them over with some dry mould or coal ashes, in order that they may grow and root, and they remain in this condition until the second or third week in May, when they are planted. After preparing the ground for them, mark out the beds six feet in width, and any length the land will afford, leaving the alleys between the beds three or four feet wide. The Potatos are put in at one foot square, keeping the rows straight. The land being planted, growth will soon become strong, and a little earth will be required, which must be supplied from the alleys. When properly earthed, which should be done twice, the plants may be left to grow undisturbed. Watch carefully for disease, and the moment it is perceived lose no time in cutting off the haulm and clearing it away. Then sprinkle lime, sulphur, soot, or salt over the beds, and cover them over with earth from the alleys, five inches deep, allowing the middle of the bed to be highest, in order to throw off rain, and keep the Potatos as dry as possible. The whole may now be left with safety. In this way the tubers will keep as sound as possible, and a bad one will scarcely be found. *J. G. Knell, Gard. Chron., May* 6, 1854.

Publication Received.—*The Book of the Tulip*, by Sir A. Daniel Hall, K.C.B., F.R.S.; pp. 224, with twenty-four full-page plates, twelve in colour; Messrs. Martin Hopkinson, Ltd., 23, Soho Square, W.1. Price 21s. net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven-Moore, Manchester.

Calanthes.—The deciduous Calanthes, which have been resting since they finished flowering, are now starting into growth and, to avoid injuring the new roots later, the pseudo-bulbs should be repotted when the young growths are at a very early stage of development. Remove all old compost and only retain about one inch of the old roots at the base of the pseudo-bulbs to hold them in position. Only the last-made pseudo-bulbs are required for each lead. Examine these carefully, before repotting, for scale insects, which are easily removed at this stage with a weak insecticide, applied with a soft brush. Strong-growing varieties may be potted separately in pots of suitable size, which should be clean and well-drained. Smaller-growing or less vigorous kinds may be grown in groups in larger receptacles. A suitable rooting mixture consists of three parts good fibrous loam, one part dried Oak or Beech leaves, well broken up, one part of finely cut A.1. fibre, and a little chopped Sphagnum-moss, adding charcoal or crushed crocks to ensure porosity. First cover the drainage with some of the rougher pieces of the compost to prevent the finer soil from choking it, and then make the compost firm about the bases of the pseudo-bulbs; the young growths should not be covered or decay will set in; leave ample room for copious waterings later in the season. Grow the plants near the glass in a warm house, and shade lightly from strong sunshine, allowing more sun and air to reach the plants as the pseudo-bulbs mature. No water will be needed at the roots until the plants are well established, but the surroundings and pots will require frequent syringings to encourage root action. As the growths advance and new pseudo-bulbs begin to form, copious watering will be needed each time the soil appears dry, while an occasional application of weak liquid manure will prove beneficial at this stage, but any feeding should be discontinued as the flower buds begin to show on the scape. Any desired increase of stock can be made by placing the old, sound pseudo-bulbs which were removed, in a little moss, in a warm house, where they should be sprayed occasionally until they start into growth, when they may be potted up into small receptacles and grown on with the larger plants.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Strawberries.—As the time for bedding down the plants is drawing near, it is of the utmost importance that all perennial and other weeds should be eradicated and the plantations made so clean as possible. Recent rains have improved the appearance of the plants considerably, and there is still time to apply some artificial manures for their benefit, for they have passed through a very trying period. The following mixture should suit most soils:—Four parts of bone-flour, two parts of sulphate of potash, and one part of sulphate of ammonia. Apply one good handful per yard of row, and sprinkle it close up to the plants on both sides, taking care to avoid the young foliage. This manure should be worked lightly into the soil, and, in doing so, draw the soil up under the basal leaves so that it may benefit the surface roots. If old soot is obtainable, the ground between the rows should receive a good dusting. Besides being a valuable manure on all soils, soot is also a deterrent to slugs and millipedes, which are often very destructive to the ripening Strawberry fruits. Once the plantations have been thoroughly cleansed it will be found advantageous to bed down the plants immediately, as a protection from frost, and also from the point of view of economy in labour. Long, strawy litter from the stable should be laid down between the rows, tucking it well up to the plants for their immediate protection and to keep the fruits clean. Failing this litter, recourse must be made to straw, which is much more expensive, and possibly not so good for the purpose. The point, however, is to get it on before the plants come into bloom, and to apply plenty.

Stock Strawberry Plants.—Maiden plants from which it is intended to propagate, either for forcing or for furnishing new plantations, should not be allowed to fruit. The flower trusses should be removed directly it is seen that the flowers are normal. This early removal of the flower trusses will divert the whole energy of the plant into the early production of strong runners and healthy plantlets. This is very important when the plants are required for forcing, and also when the Strawberry plants are treated as annuals for the production of first-class and early dessert fruits.

General.—During dry spells, keep the hoe going in the fruit quarters to check seedling weeds. By the diligent use of the hoe not only are weeds destroyed, but moisture is conserved and air is admitted into the soil, these being very important factors in fruit cultivation.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Edgings.—Edgings in the flower garden are of various forms, and may be divided into two classes, the permanent, *i.e.*, those composed of dressed stone or tiles, and those of living plants. Of the former, little may be stated to their advantage, beyond that they are permanent and require the minimum of labour in upkeep. But the latter have much in their favour, as there is a wide range of plants at our disposal for such purposes, and the labour of upkeep is not too expensive. Of the numerous plants suitable, the Box is one of the most popular, having been used universally for ages; it is valuable for making a close, attractive edging to the formal garden. Where this is used, it should be clipped with care to the desired shape during late April or May, when the likelihood of frosts is past. By deferring the cutting so late as possible, the young growths soon cover the shear marks. Another plant that may be used with even greater effect for this kind of edging is Erica vagans, which has the added advantage of being extremely free-flowering during autumn. This makes an ideal edging in lime-free soils, and is easily kept in shape by annual clipping after flowering, or in early spring before growth commences. Where informal edgings are desired, natural stone is the best of all material to use. In many districts the material for this purpose is easy to obtain, and the stone of the district ought to be used always in preference to imported material. It should not be dressed and ought to vary in size and shape, as the stones should not be set rigidly in straight lines. By sinking them half their depth in good soil, homes for a host of interesting plants, which will give added charm to the flower garden during spring and summer, will be provided. Plants suitable for furnishing such edgings are Sedums, Saxifragas, alpine Phloxes, Candytuft, dwarf Veronicas, Thrift, Gentiana acaulis, G. verna, Helianthemums, Primroses, and a host of other alpine plants, while colonies of the early-flowering bulbs—Crocuses, Scillas, Chionodoxas, and the smaller forms of Narcissus, may also be planted, and will be a source of interest and pleasure for many months.

Cistuses.—These are among the most beautiful of flowering shrubs, but, being natives of south-western Europe and Asia Minor, they suffered severely during the past winter. When the full extent of the damage is realised, they may be pruned back to living tissue, but if the damage is very severe it will pay to replace them with young plants, as old plants seldom recover and grow freely after hard pruning. These shrubs prefer a dry, sandy soil, and in such a position will suffer less during winter than if planted in rich soil. There are many beautiful kinds, all of which are worth trying in the south, if suitable soil and situations are available. Cistus laurifolius is one of the hardiest kinds, having white flowers with a small yellow blotch at the base of the petals. C. ladaniferus, the Gum Cistus, is one of the best, and will be found to grow and seed freely on dry banks. C. purpureus is fairly hardy and extremely attractive when in bloom. C. florentinus forms compact bushes two-and-a-half to three feet high, covered with myriads of white flowers. C. cyprius is not unlike the Gum Cistus in character, but bears its flowers in clusters, instead of singly, while C. villosus and its various forms are also worth trying. Among recent introductions, that fine variety Silver Pink should not be overlooked. This seems quite hardy, it has flowers of charming colour, and it does not drop its petals so quickly as other sorts, while it is very free-flowering. C. formosus is rather tender, but is such a beautiful plant, with its bright yellow flowers, each petal having a purple-brown blotch at the base, that a position such as the top of a dry, sunny wall should be allotted to it, and cuttings taken each autumn, inserting them in a cold frame.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

The Early Orchard House.—Peaches and Nectarines will now be stoning, and careful attention to feeding, maintaining a steady temperature, early closing to trap the sun-heat, and good syringings, is essential. Once the fruits begin to swell, lateral and sub-lateral growths may be shortened back by degrees to let in light and air, and also to increase the size of the fruits. Progress will now be rapid, and liberal supplies of warm, diluted liquid manure will be necessary. The supply of air at night may now be gradually increased, but not so as to lower the temperature too much, and should be shut off early to favour a rise in the temperature for morning syringing. Ventilation may be given when the temperature is at 65° to 70°, rising to 80°, which, with full air, should be the maximum. Reduce the air supply early, finally closing the ventilators in time to allow the temperature to rise to the maximum by sun-heat. Trees in unheated houses must have plenty of air throughout the day, and watering and damping should be done early in the day, especially if morning frosts are likely to occur, and if the houses face full south.

Planting Vines.—If Vine eyes were inserted and the young plants are required for permanent planting, the middle of May, or whenever the borders are ready and the young canes are about two feet in height, is a good time to plant them. Even when planted so late as the second week in June, other conditions being favourable, the canes will top the rafters before autumn, although, if they are well rooted and the soil is thoroughly warm, the end of May is the better time. The secret of success lies in getting the compost, consisting of fresh turf, bone-meal, and old lime-rubble, made up and thoroughly warmed by the time there are sufficient roots to hold the balls of soil together when the vines are turned out of the pots. A border four feet in width and two feet six inches deep, above ample drainage, is quite large enough for the first year. Sun and fire-heat will soon raise the temperature of the border, so that the Vines may be transferred without being checked. Having well watered the soil in the pots overnight, turn the vines out carefully, gently disentangle the growing points of the roots without breaking the ball to pieces, and plant them shallowly, packing the warmest compost firmly about the roots with the hands, after which cover the surface of the ball with one inch of soil. Train the cane to a stick and keep the house close and moist, and lightly shade from bright sun; defer watering for a few days, unless the compost is very dry. After the vines have started into fresh growth, give a good watering through a rose (the water should be at a temperature of 80° to 85°) to settle the soil, and as growth proceeds, syringe and water the vines well;

by this time the shading may be omitted, except for an hour at midday if any of the vines show signs of flagging. A little fresh horse manure spread lightly around each, will complete their requirements.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Primulas.—Seeds of Primula obconica may now be sown to obtain plants for winter flowering. An improved strain may be secured in many shades of colour that are well worth growing for the embellishment of the conservatory. Seeds of this Primula are sometimes slow in germinating, therefore care is necessary not to sour the soil by frequent applications of water; the seeds should be covered very lightly and the soil should be moist when sowing takes place. Cover the receptacles with a piece of glass and plunge them in a box containing damp moss, and shade from bright sunshine. An early batch of Primula sinensis may be sown to produce autumn-flowering plants.

Flowering Shrubs.—Shrubs that have been forced will require careful treatment after flowering if they are to remain in good condition. Dwarf plants of Prunus, Staphylea, Forsythia, Deutzia and Spiraea, should have their growths thinned, and where possible, should be afforded cool treatment under glass for a short period. A cool orchard house affords ideal conditions. Standard specimens of Wistaria, Prunus, Laburnum, etc., should only be cut back to ensure the formation of shapely heads. The plants will benefit by frequent applications of weak liquid manure, and when conditions are favourable they may be syringed twice daily to assist them to break into fresh growth. Grown under these conditions until the danger of frost is over, they will repay the extra trouble bestowed on them, after which they should be plunged in ashes or some other material out-of-doors, where they may receive constant attention with regard to watering and feeding.

Coleus thyrsoideus.—Stock plants of this Coleus are now breaking into growth and, so soon as the young shoots are about two inches in length, they should be taken as cuttings and inserted three or more in a small pot filled with an open compost. When rooted, they may be potted singly, or repotted and grown on intact. This Coleus is very easily grown and produces its flowers in the dullest months of the year; it is useful for supplying cut flowers, or for grouping purposes.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER, Knowle Gardens, Dunster, Somerset.

Plants in Frames.—Seedlings in frames should be watched carefully to ensure they do not suffer through lack of water. They should be examined every morning for this purpose. Further advanced crops in frames may be given an application of liquid manure.

Rhubarb.—The Rhubarb seedlings should now be ready for pricking out into boxes or four-inch pots in a compost of good loam, sand, and a little leaf-mould. Grow them on in a cool frame until they attain a fair size, when they may be hardened off properly and planted out in ground that has been well-tilled and enriched with a dressing of decayed manure. Rhubarb crowns that have been forced should be replanted; these forced crowns, if treated liberally, make good stools for forcing again in two or three years time.

Potatos.—When the growths of the early Potatos are a few inches above the ground, soil should be drawn up to them on either side so early as possible, so as to provide some protection from frost; but if severe frosts are likely to occur, as often happens at this season, branches of Spruce or other light covering may be laid over them to protect them, removing it each morning so early as practicable.

Tomatos.—The young Tomato plants, which are intended for planting in the open garden later, will now require repotting into larger receptacles, after which they should be grown on in a cool frame, hardening them off gradually, and completely, so that they will be ready for planting out so soon as all likelihood of frosts has passed.

Marrows.—The beds for these should now be prepared, and may be made up of any rough vegetable matter, leaves, decaying manure and good loam, which should be well mixed together. Seeds may now be sown in pots or boxes, and germinated in heat. Transfer the seedlings to a cool frame so soon as the cotyledons have developed, and gradually harden them off. There is nothing to be gained by sowing the seeds too early, unless plenty of frames are available and the seedlings may be grown on in a steady temperature, and kept free from night frosts.

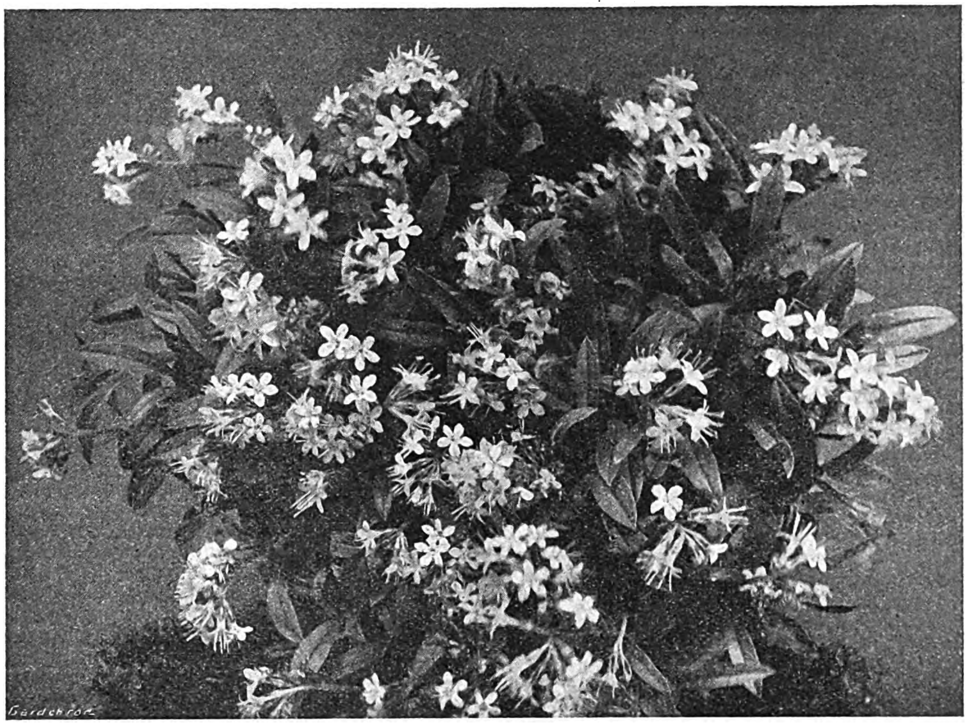


FIG. 161. MERTENSIA MOLTKIOIDES.

R.H.S. Award of Merit, April 23. Flowers blue. Shown by Mr. T. Hay, Hyde Park. (see pp. 316 and 327.)

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq., Rosemont, Monkton, Ayrshire.

Carrots, Beets and Salsify.—The main crops of these should be sown at an early date. Where the soil is stony or very heavy it pays to adopt the holing system if at all possible, for Carrots especially. The soil used to fill the holes should be sandy, without any rich material added, the whole being passed through a half-inch sieve. Not more than four or five seeds should be sown in each hole, and the latter should be ten inches or twelve inches apart.

Onions.—Plants that were raised in heat and have been well hardened off, should now be transferred to their growing quarters. If one can anticipate rain and have the planting done while the ground is moderately dry, so much the better, but no time should be lost now. If the ground has been prepared as suggested previously, it should now be given a good dusting of soot, wood ashes and an approved fertiliser, these being hoed in and the ground trodden well. In the case of transplanted plants, twelve inches apart each way, or even a little more, should be allowed, but seedlings direct from the seed-box need only be planted five inches or six inches apart in the rows. A trowel should be used for planting and as many roots retained as possible, the soil being well pressed around the plant to keep it upright; avoid deep planting. If the soil is wet at planting time, loosen the surface soil between the rows with the Dutch hoe so soon as it is sufficiently dry, to prevent it caking.

Sweet Peas.—Spring-sown plants should be planted so soon as possible. If from pots, release the roots a good deal from the ball before planting, and in every case spread them out well, making a hole large enough to allow of this. In the case of "mossed" plants, no trouble in this respect will be experienced. If Basic slag was applied earlier when preparing the trench, nothing further need be added to the soil at present.

Helleborus niger.—The tall form of this is well worth cultivation. Permanent beds should be pointed over, working in plenty of good, old manure, and if liquid cow manure is available, frequent applications of it on wet days at full strength, or in dry weather much diluted, should build up good crowns. Although impatient of disturbance, the clumps may be broken up and transplanted successfully if care is exercised. A partially shaded position and rich but not too retentive soil, suits Hellebores well.

Violets.—The Violets in frames having finished flowering, they should now be broken up and planted in their summer quarters. A cool, rather shady position should be selected for them and, if the soil has previously been deeply cultivated, a good quantity of old leaf-mould, and on heavy soil, sand, should be spread over the surface and worked in among the roots when planting. A spade is the best planting instrument to use, as the roots can then be spread out properly—one of the first essentials to success. The double varieties, such as Marie Louise, Mrs. J. J. Astor, etc., should be planted a foot apart each way, but with the larger single varieties, like Lloyd George, six inches more should be allowed. See that the collar of each plant is well down in the soil, to prevent loosening and to encourage rooting from just beneath the crown. Water if necessary and spray the plants in the evenings of dry days until root action commences. If cuttings were inserted in frames in autumn, they naturally make better plants than suckers or divided plants, and should be planted in preference.

INDOOR PLANTS.

APHELANDRA TETRAGONA.

I read with interest Mr. Barker's article on Aphelandra aurantiaca var. Roezlii in your issue of February 23 (p. 137). While this is an attractive plant when well-grown, I do not agree with Mr. Barker that it is the most handsome of all Aphelandras. I would venture to suggest A. tetragona occupies this position. Its flowers are similar in colour to those of A. aurantiaca var. Roezlii, but are larger and borne on spikes six to eight inches long. Plants raised from cuttings rooted in the autumn or early spring attain a height of two-and-a-half feet the first season, and when well grown will come into flower during early November. This plant, however, is seen at its best when two years old, and after flowering the growths should be shortened back and the plant given a slight rest before being started into growth again early in the New Year. In other respects its cultural requirements are similar to those given by Mr. Barker for A. aurantiaca var. Roezlii.

A. nitens is also well worthy of a place in the stove, with its scarlet-vermilion flowers springing from shoots bearing polished, green leaves. *J. N. McGoogan, Wisley.*

CELOSIA PLUMOSA.

Few plants make a more charming and brilliant display during the summer and autumn months than Celosias, and when well-grown they are invaluable for furnishing the conservatory or flowering-plant house, or for drawing room decoration; they are also ideal plants for the exhibitor when staging a group of miscellaneous foliage and flowering plants. Yet, in spite of its general utility, a well-grown batch of C. plumosa is seldom seen, although this plant is in no way fastidious.

Undoubtedly, the purchase of a good strain of seeds has a lot to do with the success which the grower hopes for; it is inviting failure to attempt to grow a good batch of plants from a packet of cheap and inferior seeds. Obtain the seeds from a reputable seedsman and sow them in pans of light, rich soil consisting of finely sifted loam, leaf-mould, peat and sand in equal parts; give plenty of drainage, cover the seeds but slightly, and plunge the pans on a hot-bed or stand them in a warm house; a Cucumber or Melon house will do admirably. Place a sheet of glass over the pans and keep the soil moist; germination should take place in a few days, when the glass should be removed and the pans placed near the roof-glass in full sunshine. So soon as the seedlings are large enough to handle they may be pricked off in boxes or into thumb pots, the latter for preference, so as to avoid disturbing the roots during subsequent potting. Water them in, and then place them back on a shelf near the roof-glass in a warm house, a shelf in the stove makes an ideal place, or failing this, they may be placed near the glass in a newly-planted Melon house. It is essential at all stages of growth—except when the feathery plumes are fully developed—to keep them exposed to the sun, and they should not at any stage be allowed to become root-bound. So soon as the roots are observed around the edge of the pot when turned out the plants should be potted on into three- or four-inch pots, using a compost of equal parts fibrous loam, leaf-soil, peat and dried cow manure passed through a quarter-of-an-inch sieve, with a liberal addition of silver sand. On no account should the soil be rammed hard at any potting, as this tends to make the plants flower prematurely. Keep them growing in a temperature of about 65° to 70°, and stake the growths so soon as is necessary; during hot, dry weather overhead syringing may be practised with beneficial results.

The final potting should be into six- or seven-inch pots, using a compost similar to that for the previous potting, but adding a sprinkling of Clay's fertiliser. Careful watering is essential after each potting, but the plants root quickly, and although excessive watering should be avoided, they should never be allowed to become dry at the roots. So soon as the flowering pots are full of roots, weak solutions of liquid manure, alternating with Clay's fertiliser, may be given with advantage once or twice a week. When the inflorescences begin to develop the plants may be gradually inured to cooler quarters and, if finally placed in a cool, flowering house or conservatory, they will remain in flower over several weeks. A succession of plants may be maintained by sowing seeds at intervals, the earliest sowing being made in the first half of April; if sown before this, lack of sunshine tends to make them flower prematurely, in which case they are useless.

Celosias are seldom attacked by pests, although red spider and mealy bug occasionally put in an appearance. The former may be kept in check by syringing and avoidance of too dry atmospheric conditions; the latter by applications of methylated spirit to the affected parts with a camel-hair brush.

If these cultural conditions are adopted, brilliantly coloured, feathery plumes—six inches or more long—in various shades of red, orange, yellow and magenta, may be confidently expected. *A. J. Turner.*

HARDY FLOWER BORDER.

HERBACEOUS VERONICAS.

Few genera of plants present such a wide diversity of habit, structure and appearance, as the Veronicas, for this family of plants contains numerous members of low, prostrate habit, many of which are eminently suited for culture on the rock garden; others are strong-growing herbaceous plants invaluable for furnishing borders in the flower garden; and yet a third group consists of shrubby species and varieties, mostly natives of New Zealand, and in the main, not hardy.

Of the herbaceous kinds, and it is the purpose of these notes to deal with these, some are old-established garden favourites—V. longifolia and V. virginica, for instance—and are to be met with in even the humblest of cottage gardens, but there are others with claims equal to these two species as first-class border plants.

Little need be written of V. longifolia and V. virginica, for they are both so well-known, in their several forms, as not to require description or to need extolling, although there is a variety of V. longifolia, namely subsessilis, which is not so well-known, nor so freely grown, as it should be, and is therefore deserving of mention. It is distinctly superior to the type, of erect, compact and bushy habit, and, if anything, of more vigorous growth, with large spikes, borne several on each stem, of closely packed, rich amethyst-blue flowers; it is a distinct acquisition to the border, as also is the slender spiked, bright rose-coloured form of V. longifolia var. Eureka. The varieties subsessilis, alba and Eureka constitute an admirable trio, for they brighten the herbaceous border from late June until early August.

V. spicata, in its several colour forms, is suitable for the front of the herbaceous border, so well as the rock garden, for its erect-flowering growths rise to a height of only one foot or so from a creeping, almost woody rootstock; they are clothed with downy, rather thick-textured leaves, and bear gradually elongating spikes of closely-packed, rich blue, white or pink flowers. This species, a native of Europe, including the British Isles, where, however, it is rare, is desirable in all its colour forms, for it is free-flowering—so long as it is grown in a sunny position and in not too rich soil—free-growing, and one of the easiest plants to increase by division; each growth, if pulled from the parent plant, will be found to have roots attached and will quickly become established. A variegated foliaged form of this species sometimes appears in lists, and is no doubt welcomed by those who delight in such things.

Another Veronica of exceptional merit is the dainty V. gentianoides—the resemblance of this species to the Gentian, as has often been remarked, is very remote—one of the earliest Speedwells to bloom. It has rather large flowers of the palest blue, flushed deeper on the margins, and produced during May and June; they are borne loosely in graceful racemes, twelve inches or thereabouts in height, above large, basal tufts of glossy, rich green leafage. Like the other species, V. gentianoides is free-flowering, but is not of such ample form, possessing a daintiness and airiness not often met with in this group of Veronicas, and comparable to the dainty-flowered V. Hulkeana in the shrubby section. This species also has a form with variegated foliage, often to be met with, but of rather anaemic appearance.

Although more often associated with the rock gardens than the herbaceous borders, yet V. incana is well suited to the latter and is, indeed, extremely attractive and effective when given a sunny position at the front, for few plants possess such a charming combination of colouring. V. incana forms a close, spreading mass of downy, silvery foliage, fresh and attractive throughout the summer, and then, in late summer silvery stems rise to a height of from nine to twelve inches, to be terminated by close spikes of rich violet-blue flowers which tone admirably with the silvered stems and foliage. V. incana is obviously a sun-lover, and to secure the best effect from it a sunny position should be afforded, and soil of not too rich composition.

And lastly, there is V. spuria, to give it its correct name, although it is more popularly known as V. amethystina, an appelative that admirably describes the colouring of its flowers, which are produced in gay abandon throughout June, so profusely, in fact, that each plant becomes a mound, one foot high and considerably more across, of bright amethyst-blue. V. spuria is a good perennial, free-growing, and impartial as to soil, so long as it is not so damp and rich as to cause luxuriant growth, which is not conducive to free-flowering. This also deserves a front position in the border, while, if it is planted in a sunny position in the wild garden, it will be found to naturalise itself, seeding itself about, and soon forming a very attractive colony, for it seeds as profusely as it flowers.

These herbaceous Veronicas are, as a group, the least exacting of border plants. The tall-growing sorts flourish in ordinary garden soil and do not object to partial shade; all they ask is to be lifted and divided every third or fourth year, replanting the outer portions of the clumps in freshly prepared soil. The dwarf kinds require sunny positions and soil of only moderate richness if they are to give of their best; they all produce seeds freely, and are easily increased by division. *M. W.*

TREES AND SHRUBS.

BERBERIDOPSIS CORALLINA.

The moist forests of Chile have enriched our gardens with many beautiful plants, and none, perhaps, so unique as Berberidopsis corallina, the only species of the genus. When well-established the plant grows freely, its long stems covered with hard, leathery, heart-shaped, evergreen leaves, with prickly edges and points. The inflorescence, often nine to twelve inches in length, varies in size according to the strength of the growth on which it is borne. The individual flowers, of wax-like texture, are somewhat similar to those of the Berberis, and hanging by thread-like stems have a very elegant appearance; but it is their colour, a rich, deep red, that renders them so conspicuous. It would appear that this colour and texture occurs but rarely, except under similar forest conditions, for instance, in Lapageria rosea, Tricuspidaria lanceolata, and some of the Himalayan Rhododendrons.

Being somewhat tender, the Berberidopsis needs the protection of a wall, and shade from the fiercest sun. It succeeds well on either east, west or north walls, especially if sheltered by adjacent trees. The addition of leaf-mould and sand to light turfy loam makes an ideal rooting medium. What is horticulturally known as peat, when used in quantity, is apt to turn sour and sodden after about ten years, a condition that may account for the death of many a fine plant. We lost one with a spread of twenty-eight feet in this way. Good drainage is essential. Like the Lapageria, its flowers are displayed to greatest advantage when hanging from a roof rather than on a wall, and the plant succeeds admirably as a climber on the shady side of a large conservatory. In such a position it loves moisture, and a good syringing towards evening as the sun loses power is very beneficial.

In pruning, early in spring, it is only necessary to cut out the exhausted wood and shorten any immature growths made late the previous autumn. Cuttings root readily, when about half-matured. Seeds are said to be produced but although several plants on open walls have been under my observation for over twenty-five years, I have never see any; warmer conditions or possibly pollen from another plant may be necessary. *J. Comber, Nymans Gardens, Handcross.*

SALIX BOCKII.

THIS in an ornamental Willow of considerable merit; it has proved to be a most accommodating plant, adapting itself to almost any conditions. Planted by the waterside it has much to commend it, while it does equally well in the rock garden, or in the foreground of shrubberies.

S. Bockii was introduced into this country in 1910 by Mr. Bean, who obtained it from the Arnold Arboretum, where it had been introduced from China in 1908 by Mr. Wilson. The specimen here has attained a height of four feet and is as much through, which is about its recorded stature. Its slender branches are thickly furnished with twiggy growths, which, when October arrives, are literally smothered with narrow, inch-long catkins; these are borne in the axils of the small, silky-hair-covered, oblong, mucronate leaves. The female is the form usually met with in gardens.

This species is, I believe, the latest-flowering member of the family Salicaceae. It is worthy of note that, should the weather be mild, small clusters of tiny, silvery leaves persist at the extremities of the twigs throughout the winter months. *J. Blades, University Botanic Garden, Cambridge.*

ERICA MEDITERRANEA.

GOOD as it undoubtedly is, the typical Erica mediterranea which one usually sees in gardens is excelled by a form generally listed as var. superba. Here, this excellent Heath is a trifle later in coming into flower than the type, but it is superior to the latter in the size and density of its flowering sprays. The individual flowers are also rather larger and of a brighter colour and they are borne in such profusion that a well-grown plant appears to be enveloped in a solid mass of bloom in May. The foliage of this form is a trifle darker, and the growth sturdier than in the typical shrub. Where there is only room for a limited number of plants, E. m. var. superba should always be chosen to represent this fine species.

E. m. var. alba is such an admirable Heath that one wonders why it is not more often grown. Being only about half the size of the type it is very suitable for small areas, and it can be used with good effect as a background in the bolder parts of the rock garden. With me, E. m. var. alba always comes into flower before others of its species, so that one can generally rely upon having it in bloom for Easter, even when this occurs in March. The flowers are a really good white, they are produced in densely packed spikes, and have a telling setting in the rich, glossy green of the foliage. In my light loam, E. m. var. alba does not much exceed two feet, and it is quite hardy.

E. m. var. hibernica (glauca) is a somewhat dwarf form of Irish origin, not often exceeding three feet. It does not flower with the abundance of the type, but the smoky effect of its glaucous foliage is a distinctive feature which is attractive in winter and a colour that goes well with the pale rose-purple blossoms. E. m. hibernica var. Brightness is not, as might be supposed, an off-shoot of the last-mentioned, but a green-foliaged Irish form of the type, with flowers of a clear rosy-crimson. It blooms freely, is compact in habit, and distinct enough to hold its own with honours. It grows some three feet high. There is a pink-flowered seedling from E. m. h. var. Brightness, known as rosea.

E. m. var. nana is a dwarf representative of the type species with little to recommend it beyond the fact that it does not often grow to more than eighteen inches. This would be a valuable little Heath if it flowered anything like as freely as does E. mediterranea proper, but in my experience it falls far behind the latter in that respect. But, taken as a whole, the Mediterranean Heaths (which, by the way, are of Biscayan origin) comprise a group which must always be regarded as among the most useful and beautiful of the genus. They are so hardy that none of my plants were injured during the recent frost, although the latter was severe enough to destroy the foliage and young plants of Calluna vulgaris. Moreover, these Mediterranean Heaths are in flower from March to May which means that they cover the entire period between the last of the winter-flowering and the first of the summer Heaths. The flowers, which are borne so freely, are deliciously fragrant and few Ericas are more easily grown. Almost any free soil seems to suit them, and even to lime they are not resentful. *N. Wales.*

OLEARIAS.

YOUR correspondent, *W. A.* (p. 227), does well in once more drawing attention to these valuable evergreen flowering shrubs, as they are particularly attractive and useful in many ways. O. Haastii is proving very suitable for town gardens, and it is to be hoped, will, in time, oust the commoner Laurels, etc., from suburban gardens.

In milder coastal districts, however, this variety grows much taller than the "four or five feet" mentioned, and it is not uncommon to find it twice that height, when it forms a most effective hedge or screen, which only requires to be lightly trimmed each season when the flowers are spent, in order to remove the withered blossoms, which tend to remain long after their beauty has passed.

O. Traversii has also been proved useful for exposed positions on the coast, and it was recorded in *The Gardeners' Chronicle* a few years ago that it was doing extremely well on the cliffs in the neighbourhood of Scarborough. It is a strong, quick-growing variety with glossy-green, rounded leaves, felted underneath, but with no claims as a flowering shrub, its small panicles of inconspicuous flowers being of little merit; but as an evergreen shrub for seaside gardens it is well worth growing.

O. Forsteri is another kind not so often met with as one would wish, as it makes a shapely bush up to twenty feet high, with pale, yellowish-green foliage, beautifully undulated, reminding one very much in appearance and habit of Pittosporum Buchananii. The foliage, on examination is, however, quite distinct, being heavily felted on the undersides and hard to the touch, while the Pittosporum is lacking in both these characteristics. The flowers of O. Forsteri are also of the inconspicuous type, and are produced late in the year, about October or November, in small, branched panicles.

So far as my experience goes, it is unusual to find self-sown seedlings in any quantity around established plants, although an occasional stray seedling of O. macrodonta may appear, but most Olearias are readily propagated by means of cuttings of half-ripened growths, inserted in frames or, in the milder districts, in the open border, during the late autumn. Another great point in favour of Olearias is that they withstand transplanting extremely well, and even fairly large specimens, which may have outgrown their original sites, may be moved if the usual precautions are taken to secure a good ball of roots, with every prospect of success.

The gem of the whole family is that mentioned by *W. A.*, O. semi-dentata, to which I was introduced by the generosity of Sir Herbert Maxwell, Bart., a number of years ago. It is a most attractive form, and when its lanceolate, silvery-green foliage is bedecked with the comparatively large, mauve flowers in June, it is undoubtedly one of the treasures of the garden, whether, owing to the exigencies of the climate, it is allowed the benefit of a wall, or left in its more natural state as a symmetrical bush in the open.

To all these mentioned may be added many others, which are not yet well known, such as O. argophylla (Musk-scented), O. chatamica, O. ramulosa and O. Solandri; and if I might make a humble suggestion re that invaluable work by Mr. W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, it is that in any new edition a fuller list of Olearias known to thrive in this country should supplement the present somewhat limited number given. *A. T. Harrison.*

ROSMARINUS OFFICINALIS VAR. PROSTRATUS.

THIS small counterpart of the common Rosemary is a delightful, prostrate shrub, rich in all the happy associations of its more ample congener, and very beautiful when established and draping a boulder or rocky slope in full sunshine; unfortunately, this plant has withstood the severe winter indifferently, so that only specimens growing in mild districts or congenially placed, have passed through the ordeal successfully. A sharply-drained soil and a high position in close proximity to rock, are conditions conducive to longevity, and a small stock of plants—they are easily raised from cuttings—should invariably be wintered in the cold frame or greenhouse.

The grey-blue flowers so profusely starring the closely-set branches, invest this little shrub with arresting beauty, and a well placed group will be a cool, refreshing feature of the rock garden. *Ralph E. Arnold.*

DAPHNE MEZEREUM.

As the harbinger of spring, Daphne Mezereum must surely be given pride of place among shrubs, blossoming as it does during the first three months of the year. The flowers, which are deliciously fragrant, and rose-purple in colour, are produced in profusion from the lateral buds on the wood of the previous year—the terminal buds produce leaves and wood growths only. The flowers are succeeded by bright, coral-red berries which are one-seeded, and, if sown when ripe, will produce plants true to type. This affords a ready means of increase. D. Mezereum is of very slow growth in a young state, taking four years or more to attain any size, but it may, however, be increased by cuttings inserted in sandy soil in a cold frame during August and September.

The Mezereon thrives best in a deep, loamy soil in which there is a fair quantity of chalk or lime, and while good specimens may be seen growing in full sun, this Daphne prefers shade; indeed, in shade, the colour of the flowers is softened somewhat to an unobtrusive shade of pink, which is very effective. The plants will even tolerate the drip from trees without apparent injury. Moisture at the roots, or mulchings of well-decayed manure during the summer months are essential, otherwise the quality and quantity of blooms will be restricted.

Daphne Mezereum has several varieties, including a form which blooms in the autumn and is known as D. M. var. grandiflorum (syn. D. autumnalis). The best, however, and possibly the hardiest, is D. M. var. alba. This shrub is to be found in almost every cottage garden in Perthshire, where it withstands the severity of the Scottish winters without injury. When grown in full shade, the flowers are pure white and produced in profusion during February and March. They are succeeded by bright yellow berries, which make this shrub most attractive in early autumn. Like its parent, it is readily raised from seeds, the plants coming true. One fine plant of this variety with which I am acquainted is growing in a north border which never gets any sunshine after 9 a.m. The soil is a stiff clay containing plenty of lime rubble. This plant, which is quite ten years old, is in perfect health, and blooms profusely each spring. *H. H. C., Reading.*

ALPINE GARDEN.

SYNTHYRIS RENIFORMIS.

A FAVOURITE early-flowering plant with all who grow it is Synthyris reniformis, the best member of a small group of plants from western North America, nearly allied to Wulfenia, and belonging to that great Natural Order, Scrophulariaceae. A few species are in cultivation, and S. reniformis was introduced in 1885. The cultivation of the genus is simple, but the vague statement sometimes met with that "they require the same culture as the Veronicas" does not help much. S. reniformis grows naturally on the slopes of the western mountains of the United States, and is frequently found by the sides of streamlets. This would suggest that S. reniformis would thrive best in a moist situation, but I find it is perfectly happy on a level ledge of the rock garden, where any surplus moisture from above is sufficient to satisfy its needs in that respect. It grows well in loam, peat or leaf-soil, and sand in about equal proportions, but a little more or less of either seems immaterial. S. reniformis is now well established in the affections of rock gardeners, and when in bloom from April onwards appeals to many others because of the neat tufts of kidney-shaped leaves, above which, to a height of five or six inches, are borne the furry-looking spikes of violet flowers. It is a very free-flowering and perfectly hardy with me, and has been flowered very happily this April, although the plants had been exposed unprotected to a blizzard of wind and frost without even any snow to shield them. S. reniformis does not appear to object to either sun or shade, but drought should be avoided, and where there is a danger of this a few stones laid about the plant will be welcome.

SAXIFRAGA PETRASCHII.

WHEN we find such an authority as the late Mr. Reginald Farrer giving it as his dictum, without any reservation, that Saxifraga Petraschii "stands at the head of all white-flowered Kabschia hybrids," and that since the publication of his *English Rock Garden* no other white hybrid has appeared which has a stronger claim to this distinction, it may be taken for granted that this plant is of more than ordinary beauty, which it is, and it is universally admired by plant lovers who see it in my moraine. It is a hybrid of S. marginata and S. tombeanensis, and is not only a good grower, but free-flowering, which is not the case with all of its class.

S. Petraschii forms a tuft of small rosettes, composed of spreading leaves, narrow in form, and with acute tips and keeled on the upper surface. This tuft is of great beauty throughout the year, but when covered with the pure white flowers in spring, the aspect of the plant is truly delightful. As is the case with other plants of this type, the stems are short—only two or three inches in length—with a yellowish tint, and several—three to four, usually—of the wonderfully large, snowy-white flowers are borne on each stem. I grow it in a whinstone moraine with a little lime added.

GENTIANA VERNA.

THE glorious colour of Gentiana verna appeals to every one, and it is really amazing to see how so small a flower strikes the eye with such brilliancy as to attract even at a considerable distance. Close inspection does not detract from the impression formed a little way off, but rather heightens it, so intense is the blue, which is accentuated by the white eye which characterises the bloom before fertilisation.

The Spring Gentian is one of the most enchanting of our spring flowers, and happy is he who has established it in his garden and can enjoy its glorious flowers year after year. But—and who often does a "but" enter into our consideration of flowers ?—it is not always that success attends the efforts of the gardener to woo this charming plant, and to persuade it to dwell with him. Too frequently, G. verna disdains all his care and dwindles away, although all the stock prescriptions are tried. It remains a problem with many and even experts admit that so much depends upon the soil and other conditions that it were empiricism to dogmatise upon the question of culture. An eminent, authority suggests a compost of one part leaf-mould to two or three times as much of the coarsest sand, a sunny slope for the bed, with coarse drainage and plenty of chips; underground water in summer and "plenty of company, of not strong growth." The soil compost is easily secured, and the sloping bed with drainage also, but the underground water is not available everywhere, and few provide it. The question of company is a difficult one, as in some places even the dwarfest plants we have may act the part of the monster created by Frankenstein and destroy the object of our admiration. In practice, I think it will be found that a mulching with chips or small gravel will be equally acceptable to G. verna, although in nature it revels in the neighbourliness of its companions of the Alps and elsewhere. A top-dressing of leaf-soil and sand, and this mulch of chips, will give it an opportunity of making its growth unharassed by any fear of extinction by its enemies—drought, want of shelter for its thread-like roots, and excessive wet in winter.

All this applies to the various forms of G. verna, and one desires to mention the special beauty of G. verna var. angulosa, one of the best forms of a wondrously beautiful flower, of which there are, however, some poor examples, some thin and without substance; others small and poor in colour. The variety angulosa has none of these defects. It is large (for the species), is of grand colouring, of excellent form, and seems even more robust than most of the forms offered by the trade. Here it is growing on the level in loam, sand and leaf-soil, with the surface covered with chips. It is well supplied with clear water and thrives and flowers apace. *S. Arnott.*

THE GENUS PRIMULA.

(Continued from p. 282).

MICROLOMA (Hand.-Mazz.). Small-podded P.
(Candelabra.)

A VERY beautiful, herbaceous perennial species, with a tuft of green, egg-shaped leaves one inch to three-and-a-half inches long, broadly rounded or sub-truncate, slightly narrowed towards the base; margins sharply and densely toothed; upper surface more or less smooth, under side sprinkled with yellow meal. Flower stems one to two in number, four to eleven inches tall, slender, bearing one or two superposed umbels of two to six white blossoms, on slender stalks clothed with yellow meal. Corolla about one inch across, funnel-shaped, downy without, divided into five rounded, cleft lobes; tube more or less cylindrical, short, downy, about as long as the calyx, with a thick ring in the mouth. Flowers in July. Not in cultivation.

Grows in the shade of Rhododendron bushes in Pine forests on the mountains of the Salween-Irrawaddy Divide, in north-western Yunnan, at about 10,500 feet above sea-level.

Culture: Peat, friable loam and leaf-soil, in a cool, shady spot, should suit it.

MICROPETALA (Balf. f.). Small-petalled P.
(Muscarioides.)

A beautiful little species from the eastern Himalayas, with a short rootstock and small rosettes of greyish leaves about two inches long, with oblong-oval, blunt or rounded blades gradually tapering to a narrowly-winged stalk, expanded at the base into a long, narrow sheath; margins entire, or edged with obscure, rounded teeth and fringed with minute hairs; both surfaces covered with very minute down. Flower stem about four inches tall, downy, green, bearing a head of blue or violet, deflexed blossoms. Corolla about three-eighths-of-an-inch long, somewhat fleshy, narrowly cup-shaped, with five overlapping, egg-shaped, slightly notched lobes; tube cylindrical, dilated upwards, about a quarter-of-an-inch long. Flowers in June.

Grows in damp, somewhat shady, rocky places in short turf, in Bhutan, in the eastern Himalayas, in Champa Pumthang, also on Nam La in south-eastern Tibet, at 15,000 to 16,000 feet above sea-level.

Culture: As for P. metria.

MICROSTACHYS (Balf. f.). Stachys P.
(Malvacea.)

A pretty, slender species with a sparse tuft of somewhat membranous leaves, with broadly-oblong or oval blades, three-quarters to one-and-a-quarter inch long, rounded at the tip, broadly wedge-shaped or sub-rotund at the base, borne on distinct, minutely downy stalks; margins rather deeply cut into rounded lobes; both surfaces covered with minute down. Flower stem slender, three to eight inches tall, bearing an elongated raceme of three to twelve rose-coloured, yellow-eyed blossoms, on stalks barely one-eighth-of-an-inch long. Corolla more or less flat, about half- to three-quarters-of-an-inch across, divided into five broadly wedge-shaped, deeply notched lobes; tube narrowly cylindrical, about half-an-inch long. Flowers in July and August.

Grows in open, stony pastures on the Mekong-Yangtze Divide, in Yunnan, western China, at 9,000 to 10,000 feet above sea-level.

Culture: As for P. blattariformis.

MINIMA (Linn.). Least P.
(Auricula-Chamaecallis.)

A very beautiful, minute species, forming mats of dark green foliage. The broadly or narrowly wedge-shaped, abruptly truncate leaves are from half- to one inch long, the truncate portion being furnished with sharp teeth; both surfaces are more or less smooth. Flower stem from almost obsolete to one inch long, bearing one to three bright rose-pink blossoms, with white throat, on very short stalks. Corolla funnel-shaped at the base, flattening upwards, three-quarters- to one-and-a-quarter inch across, lobes broadly heart-shaped, bifid; tube longer than the calyx. Introduced in 1819. (Illust. in *Jour. Roy. Hort. Soc.*, Vol. XXXIX, 1913).

Grows in wide lawns on the alpine moorlands of limestone or granite, ranging from central and southern Austria, through the Balkan Peninsula, to Bulgaria, reaching an elevation of 9,000 feet above sea-level.

Var. alba (Opiz.). Flowers white; Bohemia.

Var. caulescens (Wimm.). Flower stems twice as long as the leaves, flowers small, rose; Riesengebirge.

Var. fimbriata (Tausch.). Flowers with shallowly fringed lobes; Riesengebirge.

Culture: Good fibrous peat and loam, mixed with limestone chips, and kept reasonably moist when the plant is in growth fulfil its requirements; it should be planted among very dwarf growing grasses or other dwarf alpine plants, in an open situation.

MINOR (Balf. f.). Small P.
(Nivales.)

A pretty, fibrous-rooted perennial species retaining much of the dried remains of previous seasons' foliage. The smooth, oblong-spathulate, blunt, somewhat thick leaves are about two inches long and taper to a narrowly-winged stalk dilated at the base into a sheath; margins recurved and furnished with minute, rounded teeth; upper surface sparsely covered with yellow meal, underside densely so with the exception of the central nerve and stalk. Flower stem two to three inches tall, purplish and coated with yellow meal towards the tip; the blossoms, which number about eight, are borne in an umbel of purple, mealy stalks sub-tended by purple bracts. Corolla about three-quarters-of-an-inch across, violet, with a white eye; segments flat, narrowly oblong or elliptic, entire or very obscurely toothed; tube mealy outside, cylindrical below, dilated upwards with a conspicuous five-lobed ring in its throat. Flowers in May.

Grows in rather dry situations on open mountain slopes, in the shade of rocks near Atuntsu, in Yunnan, western China, at 13,000 to 14,000 feet above sea-level.

Culture: Good fibrous loam and leaf-soil, in a well-drained spot, are indicated. *A. W. Darnell.*

(To be continued).

PLANTS NEW OR NOTEWORTHY.

MERTENSIA MOLTKIOIDES, C. B. CLARKE.

THE American species of Mertensia furnish the flower border with strong-growing, handsome plants from one-and-a-half to three feet in height, while those from the Himalayas are dwarf alpines. All are plants of the margins of woods and are never seen at their best when exposed to full sun; they delight in moist, shady situations, and with abundance of leaf-soil to grow in.

I found them far easier to cultivate in the north of Scotland than in the south. The Indian species are, perhaps, easier to manage than the American, and so far as M. moltkioides is concerned, this can be confidently stated, as it has proved one of the most accommodating plants, impervious to frost or cold, being in full flower in several gardens during April of the present year.

It dislikes pots and frames, and has formed within sixteen months from sowing, fine clumps which have all flowered freely in the open border.

So far, no reference to this species having been in cultivation has been traced; its nearest ally is M. elongata, but M. moltkioides (Fig. 161, p. 323), is a more vigorous plant, and likely to remain in gardens. When in flower, it is but three inches in height, of an exquisite shade of blue, leaves oblong or elliptic, two inches in length, and hairy. It is an alpine of great beauty and promise; native of Kashmir, in the margins of forests north of Hayan Pass, at 11,000 feet.

It received the R.H.S. Award of Merit on April 23.

The genus Mertensia comprises about forty species, some of which would be fine acquisitions to our gardens. Our own native M. maritima is well worth cultivating.

TROLLIUS ACAULIS, LINDL.

THIS species was figured and described by Lindley in Volume XXIX of the *Bot. Mag.*, t. 32 (1843). It has occasionally found its way into trade catalogues but has remained a very scarce plant. Farrer describes it as a treasure from the high Himalayas requiring the underground-watered moraine bed; this, however, does not seem necessary, for at the moment the plant is flowering without any protection or special treatment and only at an age of sixteen months from seed-sowing.

This diminutive species, only a few inches high, carries flowers over two inches across, of a good yellow, which open out widely after the fashion of T. patulus. The plants, being young, are bearing only a single blossom each, but this gives a good idea of what they might be capable of when established and grown into good clumps.

T. acaulis is also figured in two recent works on the Kashmir flora, Blatter's *Beautiful Flowers of Kashmir*, and Coventry's *Wild Flowers of Kashmir*, and is described as a dwarf alpine perennial with unbranched stem, radical leaves deeply cut into fine lobes; flowers large and showy; the whole plant only from three to six inches in height, but the flower stem lengthening when going to seed.

It is the only species in Kashmir, and is a common plant there at from 10,000 to 13,000 feet, and abundant on Apharwat.

Trollius acaulis flowers in Kashmir during June and July, but in cultivation it promises to be much earlier.

CALTHA PALUSTRIS, LINN. VAR. ALBA, HOOK.

OUR native Caltha palustris when seen luxuriating in a wet meadow or wood, is a handsome and imposing plant both in foliage and flower. The variety under notice is a white-flowered counterpart of our native species, and has already been honoured with the R.H.S. Award of Merit, when exhibited by Mrs. Botfield in March, 1927. The plant was shown in a pot and was much admired.

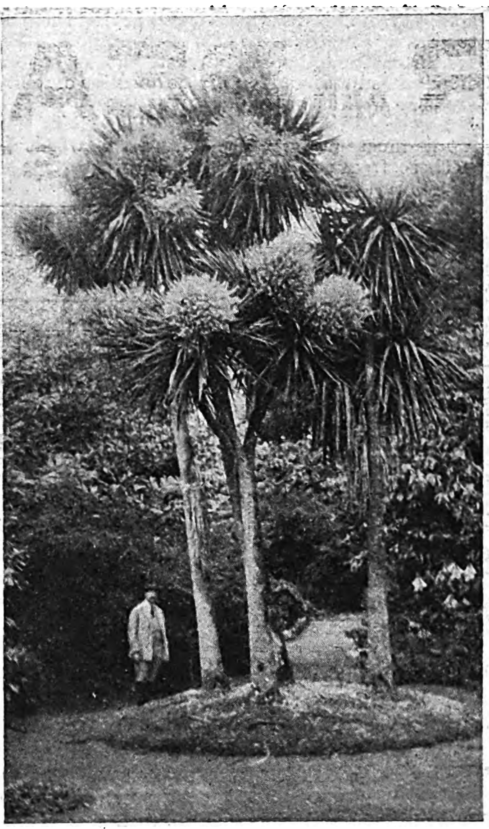


FIG. 162.—LOGAN: CORDYLINE AUSTRALIS.

(see p. 329).

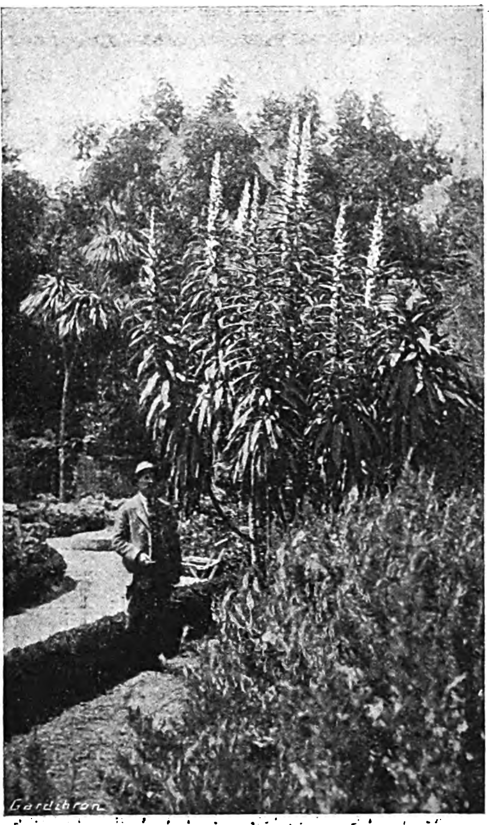


FIG. 163.—LOGAN: ECHIUM PININANA.

(see p. 329).

At present, I have the plant flowering in the open, where it is particularly attractive. Although still in the young state, it is bearing large, pure white flowers nearly two inches in diameter, which are brightened by the cluster of rich yellow stamens. It promises to be a healthy, happy plant, a worthy companion to our native species, and requiring no different treatment.

This variety of Caltha is a native of Kashmir, and is figured in Coventry's *Wild Flowers of Kashmir*, Vol. I, t. 6. I am informed that it is plentiful at Gulmarg, in wet, marshy ground, at 11,000 feet elevation.

The above three plants all formed part of a large collection of seeds, plants and bulbs sent over in the autumn of 1927 by His Highness The Maharajah of Kashmir for the decoration of the Royal Parks and Gardens.

ASTRAGALUS UTAHENSIS, TORR. AND GRAY.

IT requires some courage and a great amount of knowledge to write anything about a genus which comprises about 1,500 species. Out of this great number Bailey describes only ten in his *Cyclopedia of Gardening*, and Nicholson about thirty in his *Dictionary of Gardening*.

Representatives of the genus seem to be found all over the world and include dwarf alpine species, sub-shrubs, and herbaceous kinds. That there must be many desirable species in so large a genus is certain, but they are very rarely seen in gardens or referred to in current gardening literature. It is, no doubt, among the dwarf species that there will be found those most worthy of being cultivated, and the American members of the genus would be most suitable for our climate.

Seeds of Astragalus utahensis were received in the autumn of 1926 from an enthusiastic plantsman of Salt Lake City, and under the skilful treatment of Mr. C. T. Musgrave plants grew to perfection, and were exhibited by him at the R.H.S. meeting of April 23 (Fig. 160, p. 321). This species is described in most of the American manuals, but in Rydberg's *Flora of the Rocky Mountains* the genus has been so divided that a large number of new and strange generic names appear and Astragalus utahensis is now called Xylophacos utahensis.

It may be briefly described as a dwarf perennial plant with divided leaves, each with from twelve to eighteen white leaflets. The flower stems are about eight inches high, ending in a cluster of from six to ten flowers of a pleasing rose-purple shade. The whole plant is delicately harmonious and beautiful.

This Astragalus is quite hardy, but of slow growth in its early stages. Mr. Musgrave says it is even more striking during its summer state, when it forms a lovely mound of almost white foliage. *T. Hay, Hyde Park.*

BOG AND WATER GARDEN.

CARDAMINES.

I AM glad to see that your contributor, J., (p. 246) has written in favour of Cardamine macrophylla, and has referred to some others of the genus. C. macrophylla is a much better plant than is generally supposed, but it requires to be carefully planted on account of its colour. By some mischance, C. macrophylla was planted next a group of plants of Saxifraga decipiens var. Red Admiral, and as the two were in bloom at the same time the colour effect was far from pleasing. Now the Cardamine has been relegated to a moist corner devoted mainly to moisture-loving Primulas, and there, kept within bounds, I expect it to do well and be very effective.

I observe that the same contributor states that the pure white double variety of the Lady's Smock, C. pratensis, is "unheard of now." It is a plant I once had, but am desirous of getting again, although, as a garden plant for effect, the double lilac one is superior. I note also his remark concerning C. trifolia, that it "misses being a front-rank plant." This is true, but it is so early and so oblivious to bad weather that it deserves a place where there is plenty of room. Many years ago, I used to wonder at the high opinion held of it by a keen amateur of my acquaintance, but after growing it, I was not surprised. At that time we had a much smaller choice of early flowers, and this plant was sometimes very useful for spring effect. *S. Arnott.*

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GRANT THORBURN.

IN the records of that great army of Scotchmen who have left their native land to carry civilisation to less favoured countries, the name of Grant Thorburn, New York's pioneer seedsman, should surely be enrolled.

His life and work are, fortunately, preserved in a small autobiographical volume published in London in 1834, which is entitled *Forty Years' Residence in America; or the Doctrine of a Particular Providence Exemplified in the Life of Grant Thornburn (The original Lawrie Todd), Seedsman, New York.* Apart from its general interest as a picture of New York in the beginning of the last century, it preserves for us a record of the founding of the seed trade in New York that is of special value.

Thorburn was a typical Scotchman of his day, and he faced his journey to the unknown country with a dour courage, upheld by the realisation that Providence had him in her special charge.

His father, "a stiff Scotch Presbyterian" and by trade a nail-maker at Dalkeith, near Edinburgh, brought up his son to his craft, but at the age of twenty-one, Grant Thorburn and his brother set sail for America on April 13, 1794, and on June 16 they arrived in the harbour of New York with three cents only between them and starvation. Employment in his own trade was, however, found at once, and for some time continued. The day of the machine was, however, approaching, and before long the hand-making of nails went the way of so many other handicrafts.

Two years' work had enabled the brothers to lay by a hundred dollars, with which they stocked a small cutlery store, but as the stock made but a poor show, some bricks were secured and covered with paper, and a spoon or fork attached to each on the outside, thus creating an appearance of great resources. From this occupation, Thorburn passed into the grocery business, and it was this, curiously enough, which led him into the seed trade. Referring to the year 1801, he states: "About this time the ladies in New York were beginning to show their taste for flowers, and it was customary to sell the empty flower pots in the grocery stores; these articles comprised part of my stock."

From empty flower pots to full ones was an easy step, and finding a man selling plants in the "Fly Market, which then stood in the foot of Maiden Lane," he purchased some "Rose Geraniums," evidently one of the scented-leaved species, from his description, and potted them up to draw attention to his flower pots. The venture attracted some interest, but as several of his customers lived far off, the question of selling seeds as well as plants arose.

The small beginning of the seed trade in New York must be given in his own words:—"These frequent inquiries at length set me to thinking, that if I could get seeds, I would be able to sell them; but here lay the difficulty, as no one sold seeds in New York, no one of the farmers or gardeners saved more than what they wanted for their own use; there being no market for an overplus. In this dilemma, I told my situation to George Inglis, the man from whom I had always bought the plants in the Fly Market. He said he was now raising seeds, with the intention of selling them next spring along with his plants in the market; but if I would take his seeds, he would quit the market, and stay at home and raise plants and seeds for me to sell. A bargain was immediately struck; I purchased his stock of seeds, amounting to *fifteen dollars*; and thus commenced a business on September 17, 1805, that already is the most extensive of the sort in the United States.

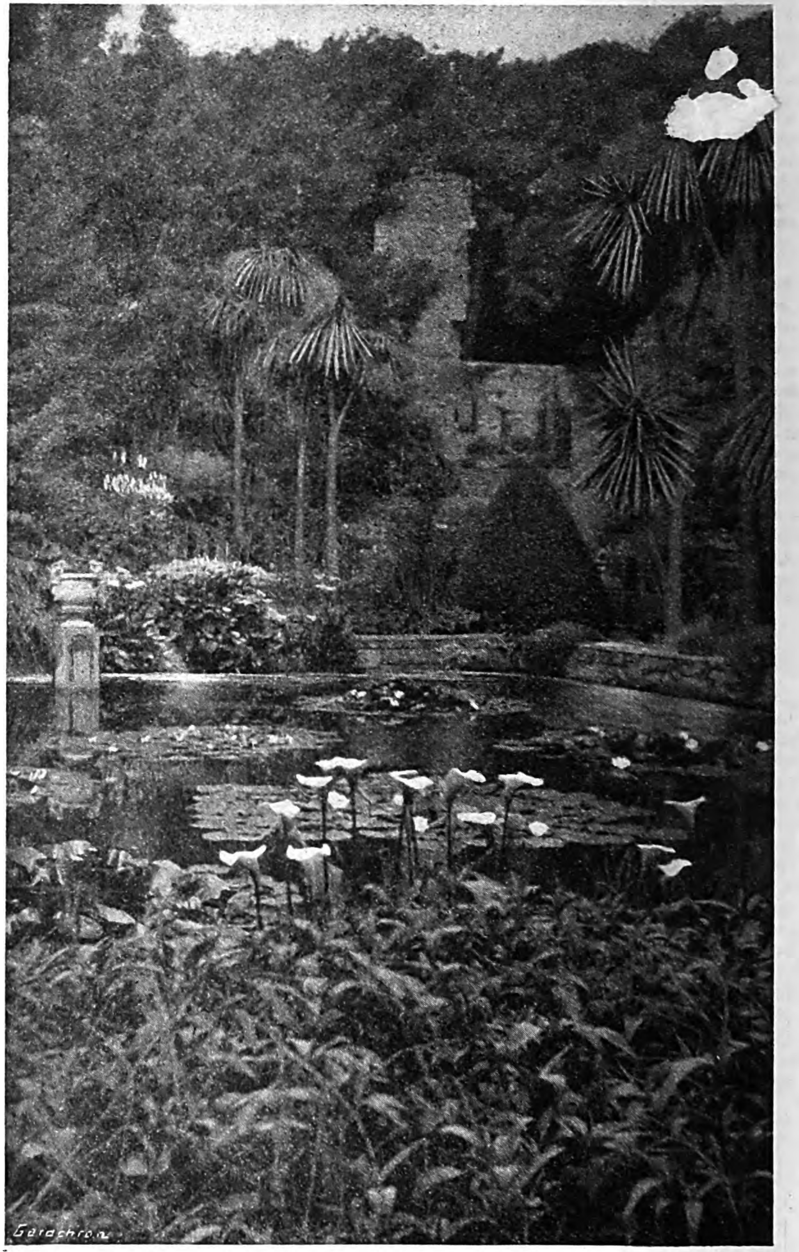

FIG. 164.—LOGAN: RICHARDIAS, NYMPHAEAS AND CORDYLINES.

"I now advertised in the papers of the day garden seeds. In a short time my small stock was all sold out; I knew not where to replace them. In this difficulty a friend* stepped into the store, and introduced me to his friend, Mr. Morgan, just arrived from London, having a small invoice of garden seeds, which he was willing to sell at a small advance. A bargain was soon struck, for the invoice contained the very articles I was daily asked for, and knew not where to obtain. Next day, on opening the casks, I found a catalogue of seeds for sale by William Malcolm and Co., London; this was at that time a prize to me, for never before this had I seen a seed catalogue. This catalogue had noted on the margin the time of sowing—a thing I was totally ignorant of. Having now a plan, I published a catalogue of my own, and, with the assistance of my friend the gardener at Brooklyn, adapted the time to suit our own climate; so that now, when my customers asked when such and such seeds ought to be sown, I was able to give the necessary information. Next fall, I sent a small remittance with an order to Mr. M. The seeds arrived in good season, and, with the seeds raised by my friend at Brooklyn, composed a good assortment to commence business in the spring. The seeds

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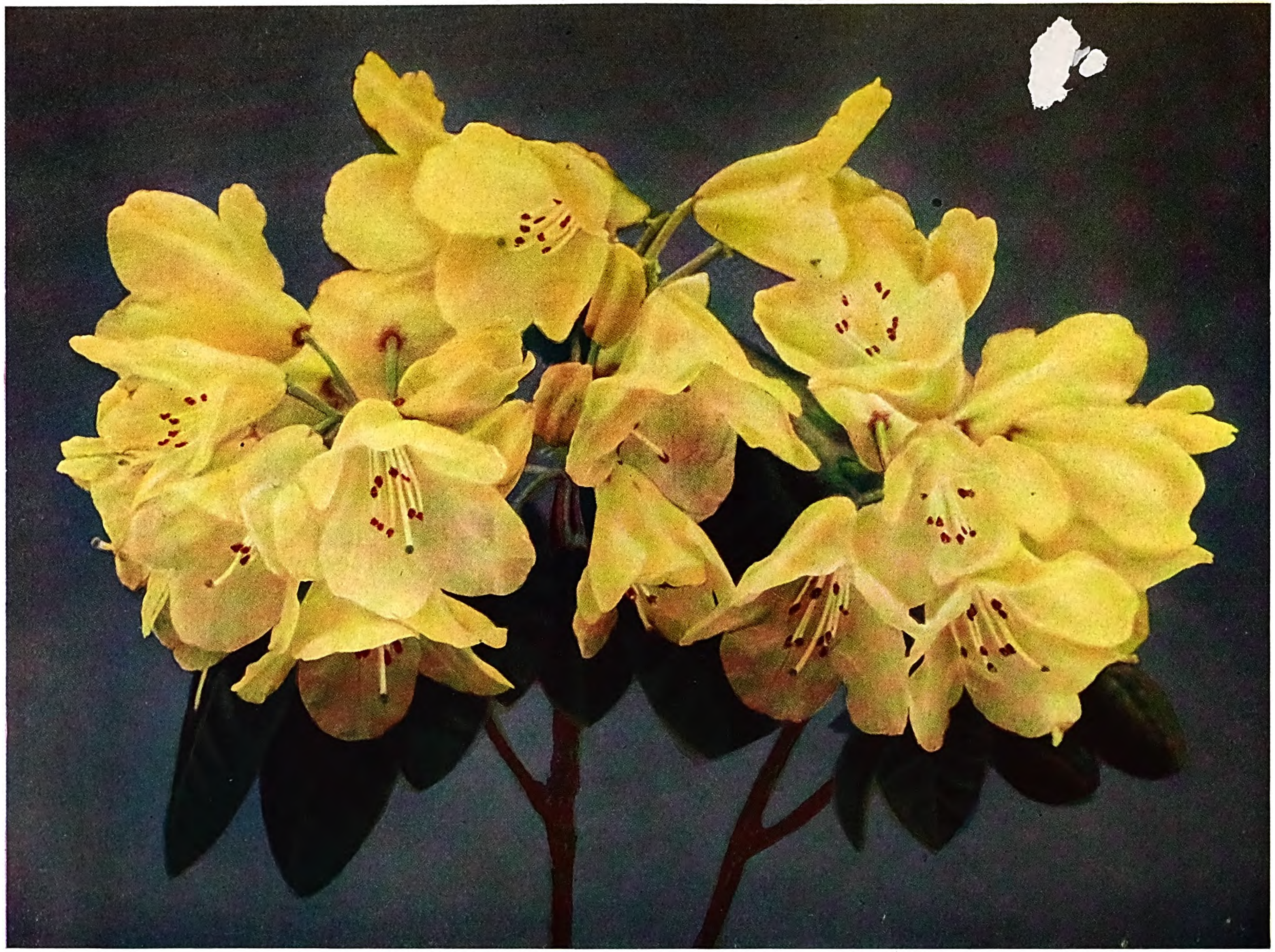
* T. L. Rich, for a long time a respectable merchant-tailor in Wall Street.

Supplement to "The GARDENERS' CHRONICLE.'



RHODODENDRON CAMPYLOCARPUM.

I had imported and got raised here, proving very good, my sales increased beyond what my friend could supply; and some of the market gardeners, supposing they might be able to sell me seeds, had this year raised seeds for that purpose. Having no other resource, I was fain to purchase such as were offered, and being a mechanic by profession, and alike ignorant of seeds and gardening, I had long to struggle with the impositions of unprincipled seed-raisers, they often selling me spurious seeds, and asserting they were of the most genuine quality.

"In 1808, when all intercourse between America and Britain was suspended, and we were therefore prevented from importing such seeds as are necessary in our business, I was advised by my friends to attempt the raising of them myself. I was drawn into this business much against my own inclination and better judgment, as you will see in the sequel.

"A few years previous, a gardener from England by the name of Thornly, purchased about seven acres of land near Newark Bridge, which he improved as a kitchen garden, and for raising a few seeds; but failing of success, and getting in debt, he absconded."

For various reasons which need not be detailed here, things for a time went wrong for Thorburn, and he had to take refuge in bankruptcy, to which it seems, in those days, a short period in gaol was a necessary preliminary. But, as stated previously, success finally rewarded his labours, and the business grew to be of importance.

Thorburn's little book, apart from its horticultural interest, deserves reading for its own sake. His meetings with Thomas Paine and William Cobbett have the very ring of truth and reveal him as a real "character." Small wonder that Thomas Galt should have seen his value as copy and as "Lawrie Todd" introduced him into his novel bearing that name, "perhaps a little curtailed in the fair proportion of those singularities which constitute so much of Mr. Thorburn's right to distinction."

Thorburn himself wielded an active pen, and before his death no less than six books were published by him, and if they are all as good as his autobiography they should be well worth reading.

A ripe, salty character was New York's first seedsman (see p. 320), with that good opinion of himself without which little good work is done. A hero where heroism was needed, matter of fact in worldly matters, courageous—as witness his friendship for Thomas Paine—no fit companion for an elder of the church—his voice speaks to us with a sincerity which makes him alive and near to us across a century of time. *E. A. B.*

LOGAN.

GARDENERS speak of Logan, the residence of K. McDouall, Esq., with bated breath, as they would speak of the garden of the Hesperides, or even the Garden of Eden. Yet it is less mythical than either, although scarcely less legendary; nay, the writer has actually seen it.

Most of us firmly believe that it grows colder as we travel northwards, and that the farther south we go, the nearer we get to the tropics; therefore, to reach a mild climate, we ought to travel southwards, or, at any rate, south-west. Yet at Logan, which, by the way, is in Scotland, there are probably more sub-tropical plants growing than in any other garden in the United Kingdom. It is necessary, then, to correct our ideas, and we are probably justified in drawing two conclusions: (1) That the climate of England differs sharply east and west of a certain meridian, rather than north and south of a standard parallel, although the change is doubtless progressive; and (2) that perhaps, after all, water is more important to plants even than temperature.

True, Logan, being situated near the end of a narrow isthmus, is immune from frost; nevertheless, the positive good outweighs the negative evil. Nor is it only the soil conditions which count; atmospheric conditions are equally important. Mr. McDouall* has told us that at Logan the air is sometimes visibly full of salt spray, and adds that it does the plants no harm. Rather may we suspect that it does them solid good. One of the most memorable features of this audacious garden is the ease with which Tree Lobelias from Ruwenzori, Tree Ferns from New Zealand (Fig. 166), big-leafed Rhododendrons, and high alpines, such as Nomocharis and Cremanthodium, thrive—all plants which flourish in a highly saturated atmosphere. May we not reasonably infer that salt, being hygroscopic, holds the aqueous vapour in the atmosphere, and is so far beneficial to these very particular plants? There can, indeed, be little doubt that so soon as the vapour tension sinks below a certain point—and that a high one—this type of plant wilts, and that if the treatment is prolonged, the sickness is mortal; and it is for this reason that alpine plants from high, tropical mountains may hardly ever be persuaded to grow in Britain.

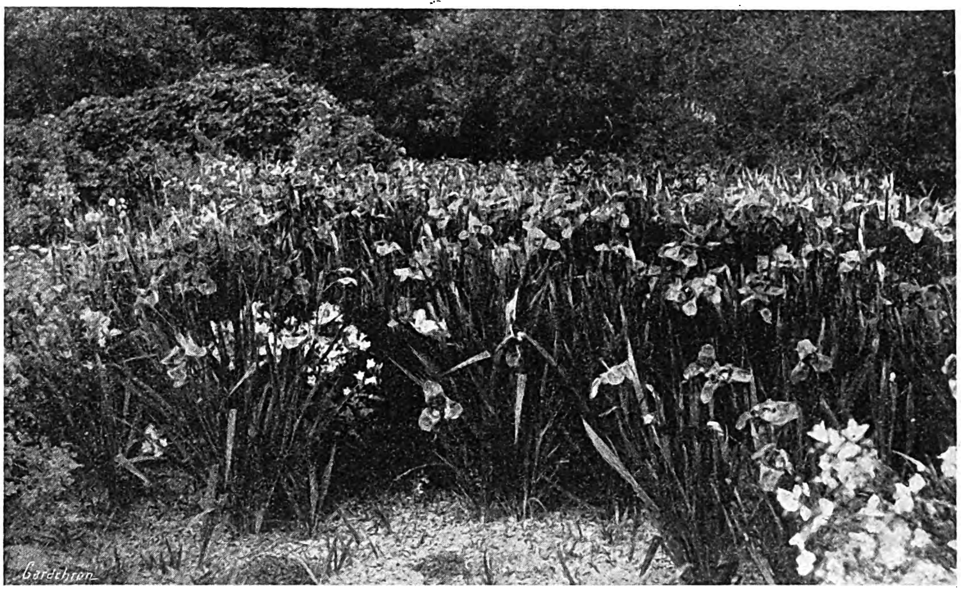


FIG. 165.—LOGAN: A BIG GROUP OF TIGRIDIAS.

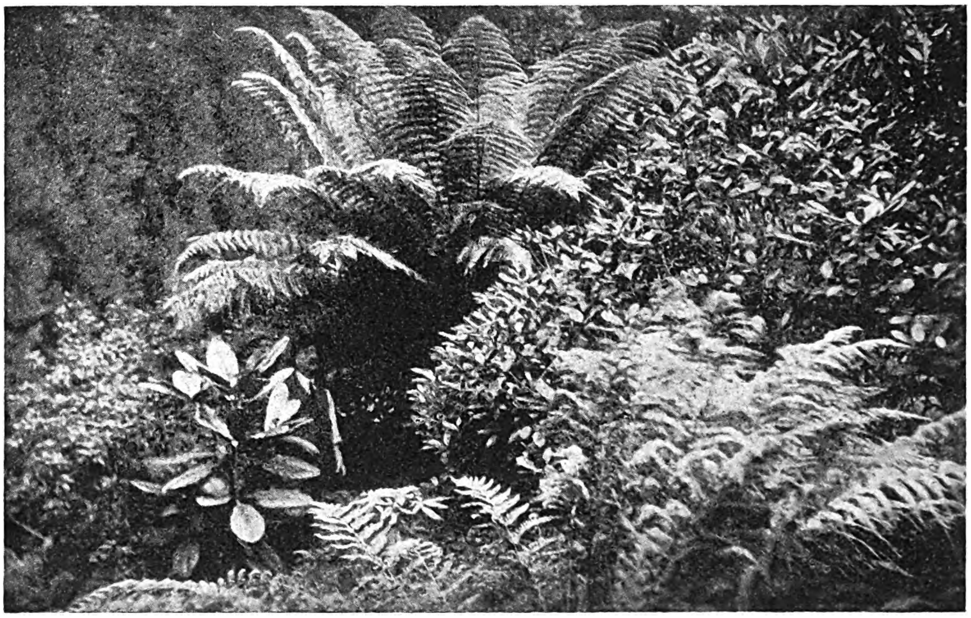


FIG. 166.—LOGAN: DICKSONIA ANTARCTICA.

And now to the results. The garden itself is a maze of interlocking parts, gardens within a garden, not so formal as a Chinese garden, where prim court opens into prim court, nor so vague and haphazard as the wilderness, with its bulging disorder, but very pleasing in its easy transition. We feel all the time that the owners have worked—and how they must have worked!—on the principle of "take care of the plants, and the garden will take care of itself." High stone walls, and a wealth of fine trees, helped by the slant of the land, protect the garden from the inrush of the south-west gales. A cross wall of Beech, twenty feet high and ten feet thick, forms a Babylonian bulkhead behind which, on a slope revetted with bricks of peat, grow many rare plants. Here all the Lilies of the field grow waist deep in seas of dwarf Rhododendrons—R. repens, R. calostrotum, R. campylogynum, and R. cyclium; and here, too, grow in sheaves and clumps, the star-spangled, pink-cheeked flowers of Nomocharis pardanthina. A number of large-leafed rosettes, with a pool of water in the centre of each, attract attention; they are young plants of Lobelia Deckenii, which had not yet flowered, but which in a few

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**Journal* of the Royal Horticultural Society, Jan., 1927.

years may shoot up their enormous spikes before dying. If these plants from the equatorial Alps can grow here, why not the New Guinea Rhododendrons, the weird and wonderful R. von Roemeri, or the lovely R. de Freesianum?

There are stately Poppyworts here, too, Meconopsis paniculata, and the blue and gold M. Wallichii, M. Prattii, M. Baileyi and M. simplicifolia; and where Tree Ferns are sowing themselves on a peat wall, Primula bella shines like a remote violet star. Cyananthus, Gentiana sino-ornata, and G. Farreri are autumn-flowering jewels.

While we wander amid the clash of colour and beauty of form we find ourselves insensibly in a new world. The scene has changed, that is all. Here a stream prattles over the living rock, working down from the tank above to the woodland below. On the rocks are crusts of Lysimachia Nummularia, Sedums, and a new annual Calceolaria with softly luminous, yellow flowers; not far away, a clump of glaucous-leafed Eschscholzia with sherry-brown flowers, and Fuchsia serratifolia, compel admiration.

We wander on in a peaceful trance, as colour succeeds colour and form changes. Always the scene changes, melting swiftly, yet insensibly, from the aggressive colour note of the cold north zone, to the dominant shape cult of the sunny south. There is a lawn here, flanked by two large bushes of Desfontainea spinosa, and at the end, a great tank, mantled with the floating leaves of hybrid Nymphaeas (Fig. 164), among which bob up the vivid, saucer-shaped flowers. The tank is surrounded by a balustrade, with large stone urns at intervals, over which lean down to the water Bamboos and other gracious trees, whose reflections fill up the spaces between the leafy rafts. A blaze of flaming gamboge radiates from a thicket of Calceolaria integrifolia, filling the scene with the divine glory of colour, and then, lifting our eyes, we see the crowned heads of Cordyline australis (Fig. 162), part of a great avenue, now sixteen years old, and are instantly translated to the pagan splendour of form. A tank of Nymphaea stellata (Fig. 168) is also a fine feature.

There was once a high glasshouse beyond the tank, but the glass roof has been removed, leaving only the wall, against which grows the yellow-flowered form of Datura sanguinea; farther along are Cobaea scandens, the flowers of which open green, then change to purple; and the silvery-green Wattle, Acacia Baileyana. There is also a huge, overflowing bush of Calceolaria violacea (Fig. 167), half smothered beneath the scarlet trappings of Tropaeolum speciosum.

A flight of stone terraces, backed by a lofty wall which culminates in the ruins of an ancient castle, is one of the most notable features of the garden. The terraced walls and gravelled ledges are draped with sonorously-coloured Mesembryanthemums, magenta and sherry-brown, and pink and brazen yellow; they hang in lurid festoons, or erupt vividly from the crevices. There are also Aloes and Saxifrages, and Rock Roses. The high wall behind is covered with climbing plants, including Aristolochia Sipho, Solanum jasminoides, and the yellow Bottle-brush, Metrosideros tomentosa.

Among an astonishing variety and profusion of shrubs scattered through the flowery courts, where their many-figured shadows cast a pleasant twilight over the glowing beds, are Azara microphylla, Abutilon vitifolium, Drimys Winteri, over twenty feet high, Tricuspidaria lanceolata almost as big, a huge plant of the evergreen Euphorbia mellifera, ten feet high and forty-eight feet round, Rosa Moyesii, Berberis Prattii, Genista fragrans, Eupatorium Weinmannianum, Myrtus Luma, and Celmisia grandiflora.

In an open arena in the more herbaceous part of the garden, an ingenious and successful experiment has been tried. A bed of deep, cool loam has been top-dressed for an inch or more with stone chips, on which one may walk about among the plants. These last, comprising gaudy Tigridias, Lilies, and especially clumps of Dierama pulcherrimum, are given plenty of room. As to the last-named, never has this oddly beautiful Cape plant been seen to better advantage. It grows six or eight feet high, and its swinging files of rosy-purple, Foxglove-shaped bells, supported by invisible wires, and sensitive to every breath, seem to float in the air. Yet, however hard it blows, the tall reeds merely bow to the gale, continuing to flutter their flowers like purple bunting. As for the spotted Tigridias, there is a clump of them ten feet across (Fig. 165), raised from seeds which germinate freely all around.

The double avenue of Cordyline australis reveals the sheer beauty of outline, and there is also a short avenue of Trachycarpus excelsa. Clianthus puniceus has climbed to the top of a Cordyline, whence it hangs in looped curtains. The Eucalyptus trees (E. Globulus) have reached a great size, and near the top of the garden are the giant Echiums (E. Pininana), from the Canaries, via the Scilly Isles. These plants, seventeen feet high—seven feet of flower spike on ten feet of stem—have outgrown the highest wall (Fig. 163).

Senecio scandens has arisen and smothered an Apple tree, whole-heartedly, and Lonicera tragophylla, with large but scentless, yellow flowers, and L. villosa, have done the same. Mitraria coccinea, beaded with translucent, scarlet tubes, hugs a wall. There are several Fuchsias and Olearias. Fuchsia serratifolia is a fine bush with strangely coloured flowers, and there are good specimens of F. excorticata. Among Olearias are O. semidentata, O. chathamica, O. Colensoi and O. virgata, with tiny leaves on long, whip-like shoots.

Round the house are massed trees alternating with tilted lawns and a long, varied avenue, in spring aflame with Rhododendron blossom, leading down to the high road. The trees are old and big, casting benign shadows, rustling and sighing always for their lost youth, and anon creaking and groaning stiffly in the wind. Pinus insignis and P. excelsa are here, and there is a fine specimen of Sciadopitys verticillata, the Japanese Umbrella Pine; another very beautiful Japanese Conifer is Larix Kaempferi.

Rhododendron Russellianum forms bushes as big as cottages, thirty feet high, and flowers year after year in a flood of crimson. There are many other species and hybrids near the house, including R. Luscombei and R. campylocarpum.

The inner circle of the garden is entirely surrounded by woods, with the sea close up on either flank. From the house itself we look out across a green lawn, fringed with the exotic shape of Cordyline rising up above an amorphous thicket, the ground all tilted cunningly awry, to a lake, just beyond which is the sea, backed by the blue hills of Kirkcudbright across the bay. On the other side, the woods are so thick and the slope so steep, that only the booming of the waves along the rock-bound coast tells of the sea's near presence; until on a day of storm, the salt spray comes winging over.

It is a delightful walk down the glen to the coast, through delicious woods, the narrow path thickly lined on both sides with Primula japonica and P. pulverulenta; and in clearings of the forest are beds of Rhododendrons, especially R. sino-grande, R. Kyawi and R. cyclium. But the main Rhododendron wood is nearer the garden, and contains hundreds of sturdy plants, including R. Keysii, R. decorum, R. Aucklandii, R. arboreum, R. argenteum, R. Falconeri, R. oreotrephes, R. Souliei, R. calophytum, R. arizelum, R. sutchuenense, R. glaucum, R. Hodgsoni, R. niveum, R. giganteum, R. Ungernii, R. lutescens, R. Hookeri, R. Maddeni, R. camelliaeflorum, and others; with splendid Tree Ferns (Dicksonia antarctica), Maples, Beech, and other shelter trees. These all grow on a steep slope facing the east, and therefore with their backs to the wind.

The herbaceous borders are dappled, undulating seas of colour. Here form is merged in a vague unity of purpose, to which all plants contribute. Thalictrum aquilegifolium and T. glaucum, bursting with clouds of fluffy yellow flowers; bands of Viscaria, like many-coloured buoys bobbing on a sage-green sea; a rainbow of Sweet Peas stirring up through the branches of dead trees to a height of ten or twelve feet; giant Delphiniums in close order; and bold clumps of the dusky scarlet Monarda didyma, which is stated to be visited by humming birds in its native America; these, with Phlox, Sweet William, Campanulas, and many other flowers, help to weave a spell over Logan. Such herbaceous graciousness, in the midst of solemn trees, enclosed by hedges of Escallonia and sheltered by the mighty wall of Beech, which forms a bulwark against the fury of the gale, is as charming as it is unexpected.

In the midst of this lively livery, we feel that the more humble and passing plants have full scope as attendants in the pageant of the trees. They act as nimble foils to display to better advantage the wonder of form in the vegetable kingdom, as best illustrated by trees. And the deep glory of Logan can never be fully appreciated unless this underlying idea of perfect outline is grasped. It appears in the garden as a whole, with its overlapping parts, smooth unexpectedness, and balanced contrast; in the groups of trees, the avenues, and cambered lawns bound with bushes; and in each individual plant, placed just where its effect will be best felt. When the surrounding woods are incandescent with the fire of Rhododendrons, in May, no doubt stark colour strikes the dominant note; when the woodland paths glow with tens of thousands of Primulas, for a time, at least, form is forgotten, and we bask in the sheer luxury of sensuous colour. But, mostly, Logan is a garden of whimsical shapes, which loom imperiously over all, gigantic and all-powerful; shapes now firm and curtly angular, now elusive and melting into soft roundnesses, ever changing like a transformation scene as the ground dips and rolls, or as we wander, wondering, by a winding path beneath the shadow of noble trees.

Nor is all this the result of chance, a hazard which has come right. Rather does it spring from a superb devotion to the welfare of plants, unrivalled skill and knowledge, and a worship of beauty on the part of the owners.

Wonderful as are the individual plants, their combination which has so completely earned the title of garden, rather than collection, is even more wonderful; so that to give mere names to these hosts of nature, growing here in perfection, seems perilously like sacrilege.

F. K. W.

NOTICE OF BOOK.

Annuals.

In the work on Annuals,* we have the third book of the series of gardening manuals published by the well-known *Gartenschönheit* firm, of Berlin, and the volume, first published in 1924, now appears in its second edition. The historical matter with which the volume opens, from the year 812 to the present day, is of especial interest, and the illustrations, culled from ancient herbals, show clearly the types cultivated many centuries ago. The subsequent matter is arranged alphabetically under the titles of the various species, and here a few cross references might be of advantage; for instance, Cacalia is found under "Emilia" and not under "C" at all. The cultural directions are clear and full, and many readers will appreciate the section on planning and planting, showing how annuals may best be utilised in all kinds of positions, although illustrations of some smaller gardens might well have been included—those shown are all of the larger size, and even include public parks.

It will be a surprise to a good many town-dwellers to learn how many hardy annuals may be successfully cultivated in window-boxes and pots. In Germany, a favourite window-box plant is the Petunia, which is excellently grown on many a town window-sill, and might with advantage be made more popular in this country in place of the ubiquitous Pelargonium.

There are a number of coloured plates of somewhat mixed merit, and some very useful alphabetical lists of the different annuals, indicating times of sowing, periods of flowering, and respective heights and colours—in fact, all the material required for the guidance of even the most inexperienced in growing annuals for various purposes,—provided he can read German.

**Einjahrsblumen*, by Paul Kache and Camillo Schneider; Berlin, Verlag der *Gartenschönheit*; price, bound, M.12, paper, M.9·50.

NOTES FROM EDINBURGH.

DURING April cold east winds have had a very drying effect on light soils. Little or no rain fell during the first part of the month and many plants felt the need of the accustomed April showers.

The temperature generally was low, but in spite of the adverse conditions, signs of growth are apparent everywhere, and early-flowering plants are making a very satisfactory show. Trees and shrubs are rapidly changing their dormant and lifeless appearance, and in addition quite a number are flowering beautifully. The green tints of the Betula and Acer families have been evident for some time—these being the first trees to welcome spring. Early frosts and cold spells have had no bad effects on the Prunus family, which is represented by P. cerasifera, P. Armeniaca, P. tomentosa and varieties in full flower. Prominent among the early-flowering shrubs are Forsythia europaea, F. suspensa, F. intermedia and F. i. var. spectabilis. The common Flowering Currant, too, is not without its charm at this time, and such species as Ribes sanguineum, with its varieties splendens and albidum, favour us with much beauty. The evergreen Osmanthus Delavayi, from Yunnan, escaped the frost which so often disfigures its beautiful white flowers. Cydonia japonica and its var. atropurpurea are aflame with brilliant flowers which show themselves proudly, although they nestle closely among the young green foliage against a south wall.

Early Rhododendrons are now a picture of beauty and especially attractive are those in the rock garden with, in some cases, backgrounds of stone. The pink R. ciliatum, on a lofty mound, overlooks its blue-coloured companion R. intricatum. R. Metternichii at the entrance to a deep valley, is ablaze with rich, rose-pink flowers. A large group of well-shaped R. racemosum is in full bloom, and very effective on the side of a mound close to the main path. This group is a special feature and remarkably attractive. Single specimens of R. ravum and R. Keiskii are bedecked in countless flowers. The former is of a beautiful pink shade, while the latter is of a delicate, pleasing, yellow colour. R. nivale is admired for its tiny, purplish-blue flowers and very dwarf, compact habit. R. impeditum has lost none of its charm as a dwarf species, and the small, purplish-blue flowers seem more numerous than the tiny leaves, so thickly are they crowded on the branches. R. sanguineum and R. repens do justice to their section and are commended for brilliance of colour and good rock garden habit. Other species, such as R. neriiflorum and R. rubiginosum, may be seen from a great distance because of their striking colours, the former having deep crimson flowers, while the latter is of a very charming shade of pink.

The American Pieris floribunda, with racemes of white flowers not unlike spikes of Lily-of-the-Valley, is somewhat attractive, and the flowers are shown to advantage by the background of dark green foliage. Other species of this genus, P. Forrestii and P. taiwanensis, are very handsome plants, and are in full flower under glass. In the same Order, Arctostaphylos Standfordiana has been covered with very pretty, white, drooping flowers. It is a remarkably attractive species, and when the blooms drop they lie around in countless numbers just like so many small hail-stones which have fallen after a winter shower.

Alpine plants are making good progress after the severe test of winter. Bulbous spring flowers are much in evidence and are represented by species of Muscari, Brodiaea and Scilla. All play their part in the colour scheme and, although common, cannot be omitted from the collection. The first to flower in the Meconopsis group is M. integrifolia var. brevistyla. Many plants on the south side of the rock garden have produced some fine, large, yellow flowers. Very little damage to this species was done by the severe winter frosts, but others, such as M. paniculata and M. superba, suffered much. The Primula family is represented at present by many good species and varieties. Among the best are P. rosea, P. minima, P. denticulata, P. frondosa, and P. The Jewel, while under glass, in the alpine house, P. Forrestii and P. Dubernardiana grow and flower side by side on a rocky ledge.

The dwarf Armeria caespitosa attracts much attention owing to its position high up in the horse shoe mound of the rock garden. Countless pink flowers cover each individual plant, and the whole makes a complete carpet. Anemone Pulsatilla and varieties, A. armena, A. montana, and A. patens, are strikingly beautiful at present, their foliage, as well as their flowers, make them very attractive, and all in this group should be treated with every care, so useful are they at this season. Trillium ovatum and T. grandiflorum are much in evidence. Raffenaldia primuloides and Gentiana verna are happy in the scree. The former is a dwarf Crucifer with golden-yellow flowers, while the latter needs no comment, so charmingly does it hold up its brilliant blue flowers to the midday sun. Shortia uniflora var. grandiflora may be termed an early gem. Its rose-pink flowers are in keeping with the beautiful, leathery foliage, and when grown in large clumps it is superb.

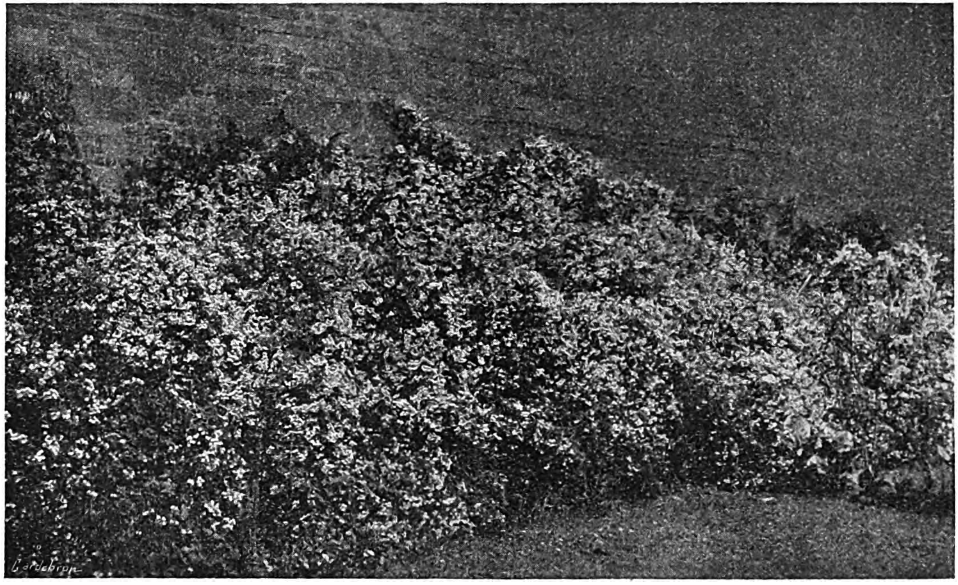


FIG. 167.—LOGAN: CALCEOLARIA VIOLACEA.

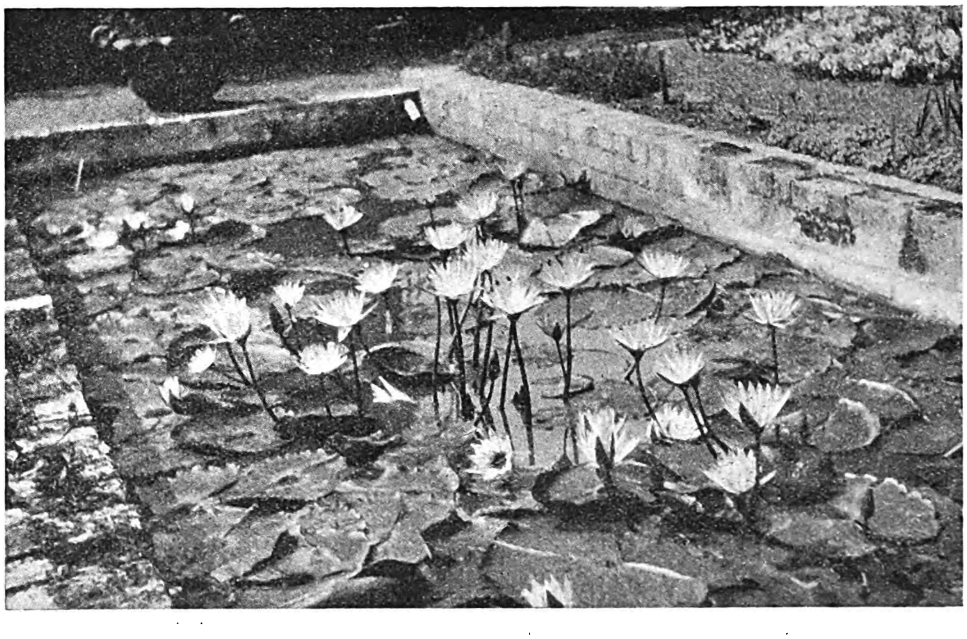


FIG. 168.—LOGAN: NYMPHAEA STELLATA.

The New Zealand Ranunculus Monroi holds up its golden-yellow flowers with great dignity. It is a charming Buttercup and, like the other members of its family, desires a somewhat damp situation. Narcissus cyclamineus, N. Bulbocodium and N. triandrus are giving a wonderful display of dainty flowers and for companions they have the various species of Erythronium.

In a damp, shady border of the Rose garden the remarkable Omphalogramma Farreri has beaten all records. This time it has produced eight wonderful, dark purple flowers, and is also unique in having an absence of foliage at the time of flowering. Its ally, O. vinciflorum, growing near-by, promises well. All the plants of this species are well above ground and looking very robust and healthy. *A. McCutcheon.*

FROST DAMAGE TO HORTICULTURAL CROPS.

In the issue of April 6 there appeared a condensed report of the Ministry of Agriculture's report on the condition of horticultural crops. This showed wide damage had occurred among market garden crops everywhere. There is another set of crops of which I send a report, and it should be of interest to all interested in seeds and gardens. My notes were made in Essex during March and April.

VEGETABLES.

Beans.—All autumn-sown garden Beans killed.

Peas.—We had no autumn-sown edible Peas. Farmers around us have lost all theirs.

Celery.—Not a plant alive.

Onions.—Autumn-sown Onions have all been killed. This I can only state accurately of the Ailsa Craig and Bedfordshire types. I cannot answer for Trebon and other types. Fortunately, bulbs transplanted for seeds have come through safely. These are sown usually in April and transplanted in November. Three-quarters to a full crop of seeds is expected.

Leeks.—All have stood well. The tips of all the leaves went white, but now all are away into fine growth.

Cabbages.—With the exception of York, which are only half-a-crop, all others will give a satisfactory yield. More care than usual has had to be given to cutting open the heads.

Beets.—If half-a-crop is obtained of Globe varieties we shall be lucky. Long Beets are still doubtful, if a quarter-of-a-crop is obtained that will be all.

Turnips.—All are good, but we sow in June and transplant for seeds, selecting roots of all varieties when the size is from large marbles to golf balls, in November.

Carrots.—On the whole, these will be satisfactory. Intermediate is specially promising. Strange to state, Altrincham is disappointing. Carrots are transplanted in November or December when about the size and thickness of one's finger.

Parsley.—This looked very bad for a long time, both transplanted and untransplanted, but is now coming away well and the crop should be about normal.

Parsnips—Hardiest of all the root vegetables. Every root is starting into good growth.

FLOWERS.

Sweet Peas.—Every plant sown outside in autumn has gone. There are very few losses in pots in cold frames, upon which we growers depend almost entirely for seeds. These clumps, knocked out of the pots, are planted out in the fields in March, eighteen inches apart in rows five to six feet apart.

Wallflowers.—These have wintered well, except Fire King. We shall have almost average crops. This is rather singular on stiff land when Wallflowers have all nearly gone on the lighter lands around London.

Candytuft.—This got badly "stung," but the plants were firmly trodden in after the first frost, and this saved fifty to seventy per cent. of them.

Antirrhinums.—All 1928 plants have been killed. In mild winters many beds of these plants stand over and furnish good crops of seeds a second time in the following year.

Pentstemons, Calendulas, Godetias, Clarkias, and all other annuals have been cleaned out like Antirrhinums. This term "cleaned out" is, I believe, correct. The frost forced the young seedlings out of the soil, and hence they died.

Pansies.—About half are dead. The same applies to Hollyhocks.

Primroses are largely killed, while Polyanthuses have not suffered so badly. The gold-laced form of the latter has come through almost unscathed.

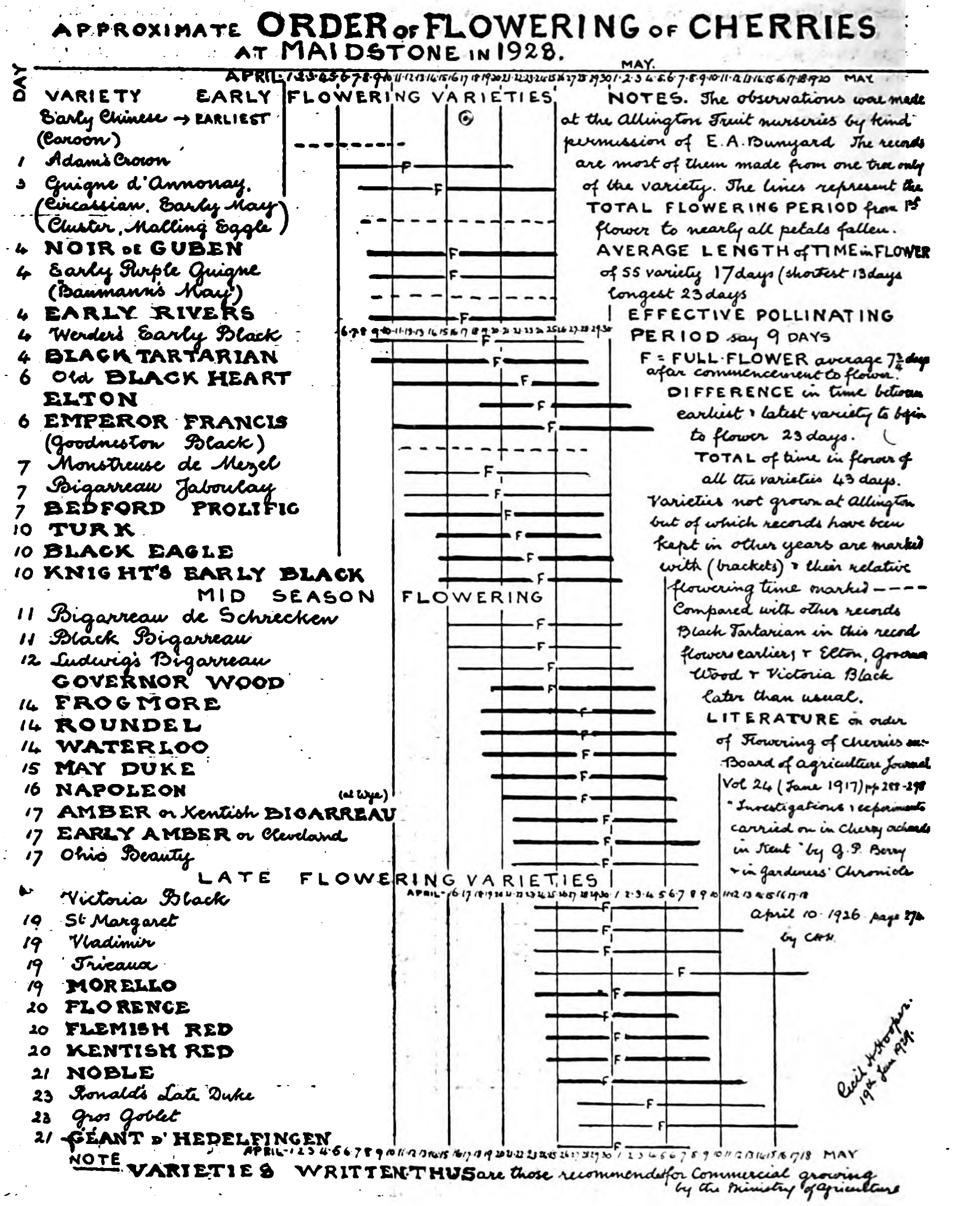
Sweet Williams.—These looked very bad for a long time, but have come away to the extent of seventy-five per cent., but will be late.

Stocks.—East Lothian and Brompton all lost.

Viola Jersey Gem.—Every plant has withstood the winter, also old clumps.

Tulips.—In some two acres of Darwin and Cottage varieties, not a single loss is perceptible.

Lonicera nitida.—Some thousands of small plants were put out a year ago to form a hedge and all have come through the winter safely. *William Cuthbertson, Marks Tey, Essex.*



ORDER OF FLOWERING AND POLLENATION OF FRUIT BLOSSOMS.*

(*Continued from p.* 313).

CHERRIES.

The Agricultural College of Wageningen, Holland, recently published a pamphlet on Cherry pollenation which ends with the following advice to Cherry growers :—

1.—In planting an orchard, plant two or more varieties in such a way that every tree of one variety has a tree of another sort next to it on one side at least.

2.—Keep a good number of hive bees in the Cherry orchard during the blossoming period.

In 1913, V. R. Gardner, of the Oregon Agricultural College Experiment Station, published a bulletin showing that different crosses in Cherries gave different yields ; besides showing that Sweet Cherries were, in general, absolutely self-sterile, he proved that the three chief varieties, Bing, Lambert and Napoleon, were inter-sterile, *i.e.*, would not cross-pollenate each other. Investigations in England at Merton and Wye have shown that most of the Sweet Cherries are absolutely self-sterile, or, if at all self-fruitful, only to the extent of about one per cent., which does not help much towards a crop ; cross pollenation is therefore of very great importance in Sweet Cherries.

The Duke Cherries are slightly self-fruitful and appear to be best pollenated by other Duke varieties and by Morello. Flemish and Kentish Red preserving Cherries are somewhat self-fruitful, but need cross-pollenation. There is a plantation of Flemish Cherries near Ramsgate which is interplanted with Kentish Red ; the crop is generally good and regular, so this seems to be good practice. The Morello Cherry is perfectly self-fruitful ; nothing is gained by cross-pollenation ; this is the only Cherry that can be safely planted alone.

Mr. M. B. Crane, in his valuable investigations at the John Innes Horticultural Institution, has found that among the varieties grown in

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* A paper read before the Royal Society of Arts, Wednesday, February 13, by Mr. Cecil H. Hooper, F.L.S., of Wye, Kent. ; Mr. H. V. Taylor, O.B.E., Commissioner for Horticulture, Ministry of Agriculture, presided.

England there are groups of Cherries that are inter-sterile, and that one should avoid planting them together alone. These are:—1, Early Rivers, Knight's Early Black, Bedfordshire Prolific, Black Tartarian and Black Eagle; 2, Frogmore, Guigne de Winkler, Waterloo and Bigarreau de Schrecken; and 3, Napoleon and Emperor Francis.

Early Rivers, being the most profitable Cherry, has sometimes been planted alone in large quantities, when it is found that the inside trees bear very small crops. Some Kentish growers (Sir Walter Berry at Selling, Mr. W. J. Thomas at Rodmersham, and Mr. H. Stevens at Wye, have each found that a variety known as "Baumann's May" is a good cross-polleniser for Early Rivers; it flowers at the same time and is ripe soon after Early Rivers, which it resembles.

In choosing varieties of Cherry to plant together one needs to avoid planting early-flowering with late-flowering varieties alone; a mid-season flowering sort might pollenate both the early- and late-flowering varieties, bridging the difference in time of flowering.

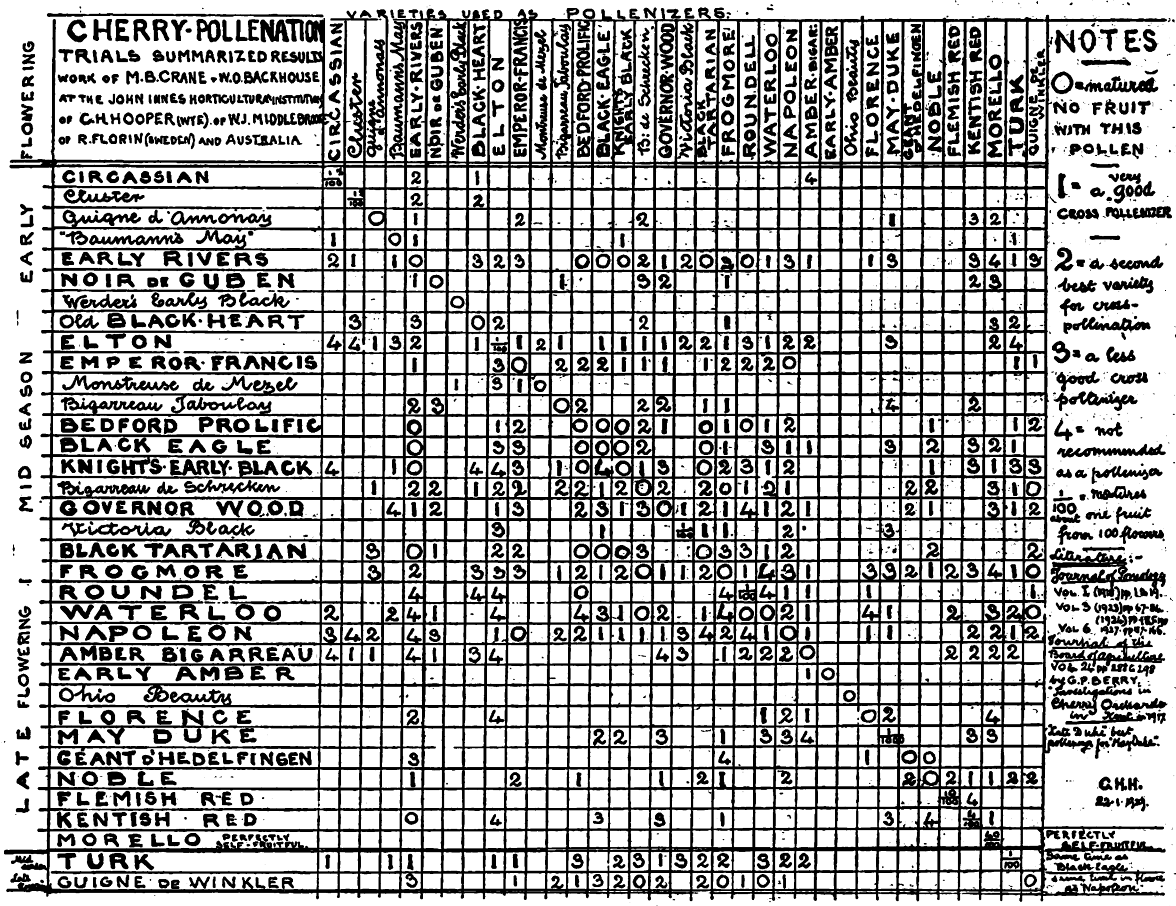
I have made a table, collected from the results of experiments and orchard observation from several sources, which I hope may act as a guide in choosing varieties of Cherries suitable to plant together; and another showing the approximate order of flowering of Cherries.

The most productive Cherry orchards I know are planted with several varieties, and bees are kept in the orchards. If one cannot manage to have one hive per acre, have a hive to five acres. It will be found to be far better than having none.

An excellent bulletin on "Pollination and Growing of the Cherry," by C. E. Schuster, was published in 1925 by the Oregon Agricultural College Experiment Station, which gives useful information on planting and re-grafting Cherries.

(*To be concluded*).

CROSS-POLLENATION RESULTS IN CHERRIES.



FLOWERING	CHERRY-POLLENATION TRIALS SUMMARIZED RESULTS WORK OF M.B.CRANE & W.O.BACKHOUSE AT THE JOHN INNES HORTICULTURAL INSTITUTION, OF C.H.HOOPER (WYE), OF W.J. MIDDLEBROOKE, OF R.FLORIN (SWEDEN) AND AUSTRALIA	VARIETIES USED AS POLLENIZERS:																																			NOTES
		CIRCASSIAN	Cluster	Guigne d'Annonay	Baumann's May	EARLY·RIVERS	NOIR DE GUBEN	Werder's Early Black	BLACK·HEART	ELTON	EMPEROR·FRANCIS	Montreuse de Mezel	Bigarreau Jaboulay	BEDFORD·PROLIFIC	BLACK·EAGLE	KNIGHT'S EARLY BLACK	B: de Schrecken	GOVERNOR·WOOD	Victoria Black	BLACK TARTARIAN	FROGMORE	ROUNDELL	WATERLOO	NAPOLEON	AMBER·BIGAR:	EARLY·AMBER	Ohio Beauty	FLORENCE	MAY·DUKE	GÉANT D'HEDELFINGEN	NOBLE	FLEMISH RED	KENTISH RED	MORELLO	TURK	GUIGNE DE WINKLER	
EARLY	CIRCASSIAN	1/100				2			1																4												
	Cluster		1/100			2			2																												
	Guigne d'Annonay			0		1					2						2												1				3	2			
	"Baumann's May"	1			0	1										1																			1		
	EARLY RIVERS	2	1		1	0			3	2	3			0	0	0	2	1	2	0	2	0	1	3	1			1	3				3	4	1	3	
	NOIR DE GUBEN					1	0						1				3	2			1												2	3			
	Werder's Early Black							0																													
	Old BLACK·HEART		3			3			0	2							2				1													3	2		
MID SEASON	ELTON	4	4	1	3	2			1	1/100	1	2	1		1	1	1	1	2	2	1	3	1	2	2				3					2	4		
	EMPEROR·FRANCIS					1				3	0		2	2	2	1	1	1		1	2	2	2	0											1	1	
	Monstreuse de Mezel							1		3	1	0																									
	Bigarreau Jaboulay					2	3						0	2			2	2		1	1								4				2				
	BEDFORD PROLIFIC					0				1	2			0	0	0	2	1		0	1	0	1	2							1				1	2	
	BLACK EAGLE					0				3	3			0	0	0	2			0	1		3	1	1				3		2		3	2	1		
	KNIGHT'S·EARLY·BLACK	4			1	0			4	4	3		1	0	4	0	1	3		0	2	3	1	2							1		3	1	3	3	
	Bigarreau de Schrecken			1		2	2		1	2	2		2	2	1	2	0	2		2	0	1	2	1						2	2			3	1	0	
	GOVERNOR WOOD				4	1	2			1	3			2	3	1	3	0	1	2	1	4	1	2	1					2	1			3	1	2	
	Victoria Black									3					1				1/100	1	1			2					3								
	BLACK TARTARIAN			3		0	1			2	2			0	0	0	3			0	3	3	1	2							2					2	
LATE FLOWERING	FROGMORE			3		2			3	3	3		1	2	1	2	0	1	1	2	0	1	4	3	1			3	3	2	1	2	3	4	1	0	
	ROUNDEL					4			4	4				0							4	1/100	4	1	1			1								1	
	WATERLOO	2			2	4	1			4				4	3	1	0	2		1	4	0	0	2	1			4	1			2		3	2	0	
	NAPOLEON	3	4	2		4	3			1	0		2	2	1	1	1	1	3	4	2	4	1	0	1			1	1				2	2	1	2	
	AMBER BIGARREAU	4	1	1		4	1		3	4								4	3		1	2	2	2	0							2	2	2	2		
	EARLY AMBER																								1	0											
	Ohio Beauty																										0										
	FLORENCE					2				4													1	2	1			0	2					4			
	MAY DUKE														2	2		3			1		3	3	4				1/100				3	3			
	GÉANT D'HEDELFINGEN					3															4							1		0	0						
	NOBLE					1					2			1				1		2	1			2						2	0	2	1	1	2	2	
	FLEMISH RED																															18/100	4				
	KENTISH RED					0				4					3			3			1								3		4		4/100	1			
	MORELLO PERFECTLY SELF-FRUITFUL.																																	40/100			PERFECTLY SELF-FRUITFUL.
Mid season	TURK	1			1	1				1	1			3		2	3	1	3	2	2		3	2	2										1/100		Same time as Black Eagle
Late flowering	GUIGNE DE WINKLER					3					1		2	1	3	2	0	2		2	0	1	0	1												0	same time in flower as Napoleon

NOTES

0 = matured no fruit with this pollen

1 = a very good cross pollenizer

2 = a second best variety for cross-pollination

3 = a less good cross pollenizer

4 = not recommended as a pollenizer

1/100 = matures about one fruit from 100 flowers.

Literature:—
Journal of Pomology
Vol. I (1918) pp. 1 to 19.
Vol. 3 (1923) pp 67-84.
(1926) pp 185-[illegible]
Vol 6 1927 pp 157-166.
Journal of the Board of Agriculture
Vol. 24 pp 287 & 298
by G.P. BERRY.
"Investigations in Cherry Orchards in Kent in 1917."

Late Duke best pollenizer for "May Duke."

C.H.H.
22-1-1929.

GARDEN MANURES FOR MAY.

In modern soil chemistry it is recognised that perfect plant nutrition depends on the presence, in an available form, of all the elements necessary to plant life, and the object of using artificial manures in the production of crops is to maintain a suitable balance of these elements, by adding fertilisers containing them in varied forms and proportions, according to the known deficiency of the soil under treatment, or the specific need of the crop in question. Just as soils vary largely in their constitution, so plants vary considerably in their requirements; some need more nitrogen, some need more potash, and some need more phosphorous than others, and almost every crop, or group of crops, may be stated to have its dominant manurial requirement, which is illustrated by the generalised statement—use nitrogen for producing leaves, phosphorus for roots, and potash for fruits.

But under all conditions, and for all crops, nitrogen plays an important part in plant development, and probably no manures give such quick results as artificial nitrogenous fertilisers, most of which are suitable for application during the growing season. While there is a considerable number of so-called nitrogenous manures giving nitrogen as their chief element, the two most important are nitrate of soda and sulphate of ammonia, the use of which tends to increase under modern intensive methods of cultivation, and both of which have powerful fertilising properties that can best be made use of during the season of active growth, and should not be applied when growth is maturing.

Up to comparatively recent times, nitrate of soda was the best-known and most widely used, but it had no definitely fixed standard of purity as, in its natural state, it is contaminated with large quantities of sulphates, common salt and ordinary earth and, although some of these were extracted before exportation, inferior grades were not uncommon; moreover, as there was no great competition with other fertilisers of a similar nature, there was no incentive to standardise. The increasing use of sulphate of ammonia in this country, however, has resulted in nitrate of soda of higher purity, and one may rely on the average sample of to-day containing not less than 15½ per cent. of nitrogen. Sulphate of ammonia, however, contains considerably over 20 per cent. of nitrogen, and at current prices its cost, based on the unit value, is very much lower than that of nitrate of soda.

In spite of the apparent cheapness of sulphate of ammonia, there are some growers who prefer to use nitrate of soda, and there is no doubt that on certain soils, and applied to certain crops, each have special advantages. A good deal depends on the character of the season, and in a very dry season probably special advantages acrue from the use of nitrate of soda, but it cannot be too forcibly emphasised that both manures can only produce the whole of their useful effects when the soil to which they are applied already contains a sufficient proportion, and in a properly assimilable condition, of the other elements required by the plant. Nitrate of soda is certainly quicker in action than sulphate of ammonia, and for this reason may be preferred for special purposes, but for general purposes this may be a disadvantage, in that the nitrate only has to be converted into a nitrite to become assimilable by the plant, and if for any reason the plant cannot absorb it immediately, loss ensues.

The conversion of the nitrogen in sulphate of ammonia into nitrates takes place in several stages, thus needing more time to effect it, but even then its action is relatively quick, and the plant derives benefit in a few weeks after application. There is a prevailing idea that sulphate of ammonia cannot be applied to growing crops, but this is quite erroneous, as in most cases where nitrate of soda could be used sulphate of ammonia gives at least equal, if less quick, results. It is, of course, necessary to avoid dusting the foliage of any plant with it, but in most garden crops it is quite easy to apply it between the rows in the early stages of growth without touching the foliage.

Some authorities advocate an application before the sowing or planting of the crop, and assert that better results accrue when this is done than when the manure is applied as a top-dressing during the early stages of growth. There does not appear to be sufficient evidence to substantiate this assertion under all conditions, however, and until such evidence is conclusive, I should prefer to advise its application, in so far as garden crops are concerned, during the early stages of growth. It is admittedly a great advantage to be able to apply it when preparing the ground for the field cultivation of Potatos, for example, but in the relatively restricted areas under garden cultivation, where in any case hand distribution is practised, its application between the rows after growth has commenced creates no difficulties.

There is an old prejudice against the use of these powerful fertilisers, because they were regarded not as plant foods, but merely as stimulants, which, in spite of modern education, has not entirely disappeared, but there is no gainsaying the fact that they form a ready means of supplying in a concentrated and quick-acting form, an element greatly needed by the plant for its full development, and, when used with discretion, afford valuable feeding properties. *W. Auton.*

HOME CORRESPONDENCE.

[*The Editors do not hold themselves responsible for the opinions expressed by correspondents.*]

Royal Horticultural Society's Accounts for 1928.—With regard to the article in your issue of April 13, my reference to the Fowler-Reader-Harper complex must not be interpreted as the Wilks tradition. Gurney Fowler is responsible for the present form of the Royal Horticultural Society's accounts. His teaching was religiously adhered to by Frank Reader. Now Gurney Fowler was a notable accountant and Frank Reader worked as long and as hard as three ordinary men. The system had the support of the Society's auditor, who has always pointed out that a change of method would at once make it impossible to compare a new statement with previous years. (In this connection, however, it is pertinent to point out that King Edward's Hospital Fund has required the hospitals to revise their systems). Personally, I have always advocated a policy of giving the fullest information to Fellows at the earliest date. Now a word on the subject of Wisley. Certain things are done very well indeed, viz. :—(a) The plant trials and permanent collections are of the utmost value in enabling Fellows and their friends to make selections of varieties; (b) Rhododendrons and other shrubs, also Heaths, are well cultivated, and the range is extensive; (c) the alpine house is a model and the cultivation of alpines is not excelled elsewhere in this country; and (d) the experimental fruit trials are admirably conducted. On the other hand, the School of Horticulture is an amorphous concern, and, if it is to be continued, should be reorganised on collegiate lines with hostel and sports grounds; at present there is no sodality. I should like to see the school develop and ultimately become a School of the University of London. The distribution of plants to Fellows is a real abuse. These plants are not "surplus," but are specially grown for the purpose; their cultivation and distribution wastes the time of the staff. I think the general distribution should be confined to a seed-list; and the Director would exercise his discretion in the supply of special plants on the lines of Kew and Edinburgh. To sum up: A very high standard is obtained in many departments at Wisley, and should prevail in all. This will involve spending more and not less money on the institution. Fellows have a tendency to abuse their privileges; an extreme case is the £2 2s. subscriber who passes on his two transferable tickets at, say, 17s. 6d. each, and thus for 7s. obtains admission to shows, plants from the distribution, and the *Journal*, to say nothing of minor privileges. How many of your readers can describe the work of the Royal Horticultural Society? The note to the By-Laws states: "It is an educational Society, for both the practice and the science of horticulture. It holds frequent meetings and lectures for the purpose of gathering together specimens of plants, fruits, flowers and vegetables, etc., demonstrating the continued advance being made in horticulture by the application of science and scientific methods; maintains a school, holds examinations, and conducts scientific research at its gardens, trial grounds and laboratories." Again, the schedule of the Chelsea Show begins in the same lofty strain: "The purpose of the President and Council in promoting these shows is partly educational and partly scientific." These are high ideals, and sincere administration will uphold them. *William Lawrence.*

The Chelsea Nurseries.—Your correspondent *W. P. W.* (p. 268), brings back very pleasant memories of the Chelsea nurseries just over forty years ago, when I used to visit Messrs. J. Veitch and Sons on business. Regarding George Schneider of the Fern department, I once heard him described as the very best Frenchman that ever came to England; he was always ready to give a helping hand to any young gardener, either French or English; he was at the time finishing *The Book of Choice Ferns*, and he related his experiences in 1870 during the Franco-Prussian war. My eldest son, a boy at school, has never forgotten it, and I well remember Schneider saying that one of the greatest comforts during the campaign was a good pair of English boots, as he was in England when the war started, and went back to France to fight for his country. I spent a very enjoyable day with him, not long before his death, at Barnes, where he lived after retirement. I also knew Mr. Minns and Mr. Tivey, and the wonderful fruit nursery at Southfields — long since built over. I have fruit trees now under my charge that came from Southfields forty years ago, in fine condition. *F. E.*

Cauliflowers.—An outstanding variety, grown rather as a second-early, is Drancourt (or Driancourt). This is largely grown in the Vale of Evesham, and being conversant with most of the sorts grown, I can state that for purity, size and outstanding quality it easily beats the others in its season. Unfortunately, it is not found under its proper name in many seedsmen's catalogues, and therefore is rather difficult to get, except locally. *G. H. E., Taplow.*

Partial Soil Sterilisation.—With further reference to Soil Sterilisation, I have received from growers all over the country letters of appreciation on the Reaseheath method of sterilisation, and, as many readers are no doubt aware, Messrs. Edmunds, of Cambridge, have adopted this method for raising plants. I have, however, received one letter from Mr. S. D. Overall, gardener to Gordon Stewart, Esq., of Ripley, Surrey, which, I think, is worth while publishing in order to convince incredulous readers:—"I thank you for particulars of Reaseheath Steriliser. I have given it a fair test and think it a better method than steam sterilisation. I have given both a good trial, and so far as I can discover the baked soil gives the best results. I have a lot of plants growing well in it, beside plants growing in steam-sterilised soil, and the plants are quite as vigorous and healthy, if not more so, and I have plants in unsterilised soil, which look quite sick beside the others. I find the Reaseheath plant more economical to run; also my loam is rather heavy, and with steam, I cannot get it into such a texture for use as the baked. The steamed soil takes days to dry, and then is not like the baked soil which I am using after two days from sterilising. I have made a steriliser large enough to do about one load at a time, and must state I am very pleased with it, thanks to you. I shall recommend your plant to anyone who is interested." I publish this letter with the permission of Mr. Overall, a gentleman I have not had the pleasure of meeting. *W. E. Shewell-Cooper, Reaseheath, Cheshire.*

SOCIETIES.

MIDLAND DAFFODIL.

APRIL 24 AND 25.—Owing to the lateness of the season, this Society's show, originally fixed for April 17 and 18, had to be postponed for a week. The show, which was held at the Edgbaston Botanical Gardens, was very extensive, thoroughly representative of the Daffodil in all its varied forms, and included a goodly number of new varieties of great merit. Mr. GUY L. WILSON and the DONARD NURSERY Co. were the most successful prize-winners, the first-named breaking the record by winning six Cups and Trophies. Unfortunately, the weather on both days was very cold, and the attendance was smaller than usual.

Groups of miscellaneous flowers and floral designs were also included and gave variety and additional interest to the show. The Floral Committee gave thirteen Awards of Merit to Daffodils, which are briefly described below.

At the Annual General Meeting, held on the first day of the show, the Society's financial position was pronounced to be very satisfactory; all the officers were re-elected, and additions made to the General Committee and Floral Committee. During the discussion, many useful suggestions were made for next year's schedule, for which a Sub-committee was appointed.

AWARDS OF MERIT.

Narcissus Kantara.—A bold, substantial flower, with a delightfully broad, white perianth, and large, white, crimped trumpet.

N. Peter Lower.—This belongs to the Tazetta section, has a lovely white perianth and a rich orange centre.

N. May Molony.—See *Gard. Chron.*, April 20, 1929, p. 300. The above three varieties were shown by Mr. GUY L. WILSON, Broughshane, Antrim.

N. Silver Plane.—A refined, pure white Leedsii form with a broad, overlapping, flat perianth and a flat, canary-yellow cup.

N. Festire.—A bicolor Incomparabilis with a white, pointed perianth suffused with yellow, and a shapely, crinkled crown, touched with orange-scarlet.

N. Market Glory.—A handsome, canary-yellow Incomparabilis with a rich orange-yellow, frilled crown. These three varieties were shown by THE DONARD NURSERY Co., Newcastle, Co. Down.

N. Mrs. Watts.—An Incomparabilis variety with a thick, creamy-white, overlapping perianth, and intense orange, crinkled crown.

N. Jorrocks.—This is a fine, strong-stemmed Incomparabilis variety with a well-formed, canary-yellow perianth, and large, deep orange, frilled cup. These two varieties were shown by Mr. W. A. WATTS, St. Asaph.

N. Radium.—A choice Barrii variety in which the white ground perianth is clearly suffused with buff. The cup is rich orange.

N. Sunstar.—Another bright Barrii variety with a stout, circular perianth and deep orange cup.

N. Sumaria.—Flowers large and well-formed, with a broad, flat, overlapping, satiny-white perianth and cup.

N. Folly.—A beautiful bicolor Incomparabilis with a broad, pure white perianth and rich orange-red crown.

N. Crimea.—This is a charming bicolor Barrii with a flat perianth and rich orange, crimped cup. The last-named five varieties were shown by Mr. J. LIONEL RICHARDSON, Waterford.

OPEN CLASSES.

The first class required thirty-six varieties representing, so far as possible, the different divisions, and three stems of each variety had to be shown. Although the DONARD NURSERY Co. were the only exhibitors, they were deservedly awarded first prize, as they had a beautifully clean lot of well set-up flowers in which the following varieties were most conspicuous, viz., Helmet, Croesus, Silver Plane, Brimstone, Sunstar, Mitylene, Warspite, Hexagon, Market Glory, Festive, Blizzard, Peter Pan, White Lady, Rosary, Carmel, Donax, Buttercup, and many unnamed seedlings.

The best twelve varieties, three stems each, of yellow, white and bicolor Trumpets, came from Mr. Guy L. Wilson, who showed handsome flowers of Honey Boy, Beersheba, His Excellency, Lord Antrim, Kantara, Countess of Antrim, Sorley Boy, and unnamed seedlings; second, The Donard Nursery Co., with shapely flowers of Brimstone, Lady Primrose, Kantara, Beersheba, Herod and White Conqueror.

The winning sets of half-a-dozen yellow Trumpet Daffodils also came from the above-named exhibitors, who were placed in the same order. Mr. Wilson's collection included exquisite blooms of Honey Boy and His Excellency. The best flowers in the second prize lot were of Brimstone, Cleopatra and Golden King; third, Mr. W. A. Watts.

In the class for six white Trumpet varieties, Mr. Guy L. Wilson was again successful, with excellent specimens of Kantara, Beersheba, Eskimo and Kenbane. Mr. W. B. Cranfield, of Enfield, who was placed second, had smaller but beautifully fresh and clean blooms which included Beersheba and Clair de Lune; third, The Donard Nursery Co.

Mr. G. L. Wilson also took the lead in the class for half-a-dozen bicolor-Trumpet varieties. His best blooms were Honour, Jack Spratt and Rosary; second, The Donard Nursery Co., who had Carmel, Jersey Cream and Vestal Virgin in excellent condition: third, Mr. W. B. Cranfield. The Donard Nursery Co. led in the class for six Incomparabilis varieties, Dingo, Market Glory and Hopeful being the pick of a really good lot; second, Mr. W. A. Watts, whose flowers of Jorrocks, Joker and Peggy Briscoe were surprisingly good; Mr. W. B. Cranfield's third prize collection included a beautiful vase of Croesus.

In the class for six white Incomparabilis varieties, The Donard Nursery Co. were again placed first. They showed charming specimens of Great Warley, Folly and Lady Mary Boscawen; second, the Rev. T. Buncombe, Black Torrington, Devon., whose vase of Gunthorpe Belle was very beautiful. The first and second prize sets of six yellow Barrii varieties also came from The Donard Nursery Co., and the Rev. T. Buncombe, who were placed in the order named. In a similar class for six white Barrii varieties, Mr. G. L. Wilson was to the fore with well set up flowers of Firetail, Lilian McLean, Dragoon, Galata and Crucible; second, The Donard Nursery Co., who had splendid examples of Sunstar, Lady Moore and Harpagon; third, the Rev. T. Buncombe.

The winning exhibitor in the class for six large-cupped Leedsii varieties was Mr. G. L. Wilson, whose long, strong-stemmed, beautifully-formed blooms of Suda, Okapi and Riva were of great merit; second, The Donard Nursery Co., whose best flowers were Mitylene, Suda, Hexagon and Blizzard; third, Mr. W. B. Cranfield. Mr. G. L. Wilson also had the best six small-cupped Leedsii varieties, and his Silver Plane and Hera were uncommonly good; second, The Donard Nursery Co.

The last-named exhibitors showed the best stand of six Triandrus hybrids, which included lovely examples of Silver Cloud, Venetia and Harvest Moon; second, Mr. W. B. Cranfield. The Donard Nursery Co. excelled in the class for six Poeticus varieties, with Antarctic and Thetis in excellent condition, second, the Rev. T. Buncombe.

Single Bloom Classes.

Yellow Trumpet Variety.—First, Mr. G. P. Cope, Albrighton, with an unusually large, richly coloured flower of Alchemist; second, Mr. W. B. Cranfield, with Harpist.

White Trumpet.—First, Mr. J. S. Arkwright, with a grand bloom of Beersheba; second, The Donard Nursery Co., with Askelon.

Bicolor Trumpet.—First, Mr. W. B. Cranfield, with Moira O'Neill; second, Mr. J. S. Arkwright, with an unnamed seedling.

Yellow Incomparabilis.—First, Mr. W. B. Cranfield, with an intensely coloured bloom of Farthingdale; second, The Donard Nursery Co., with Croesus.

Bicolor Incomparabilis.—First, The Donard Nursery Co., with a shapely flower of Festive; second, Mr. W. A. Watts, with Curlew.

Yellow Barrii.—First, Dr. D. R. Acheson, with Seraglio; second, Mr. W. A. Watts, with Minafon.

White Barrii.—First, The Donard Nursery Co., with Firetail; second, Mr. W. A. Watts, with Muriel Bibby.

Large-crowned Leedsii.—First, Mr. W. B. Cranfield, with Mitylene: Mr. J. S. Arkwright and The Donard Nursery Co. were placed equal second with Taffy and Tenedos, respectively.

Small-crowned Leedsii.—First, The Donard Nursery Co., with a beautiful flower of Silver Plane; second, Mr. W. A. Watts, with Honey.

Triandrus Hybrid.—First, Mr. W. B. Cranfield, with Venetia; second, The Donard Nursery Co., also with Venetia.

Cyclamineus Hybrid. First, The Donard Nursery Co., with Orange Glory; second, Mr. H. A. Marriner, with an unnamed variety.

Jonquilla Hybrid.—First, The Donard Nursery Co., with Solleret; second, Mr. J. S. Arkwright, with seedling No. 19.

Tazetta or Tazetta Hybrid.—First, The Donard Nursery Co., with Glorious; second, Dr. D. R. Acheson, with Medusa.

True Poeticus.—First, Mr. W. B. Cranfield, with Opera; second, The Donard Nursery Co., with Ace of Diamonds.

Doubles.—First, Mr. W. A. Watts, with Lloyd; second, Dr. D. R. Acheson, with Mary Copeland.

Seedlings and New Varieties.

The much coveted Bourne Challenge Cup, offered for twelve varieties, one stem of each, raised by the exhibitor, was awarded to last year's winner—Mr. Guy L. Wilson, whose flowers of May Molony, Buff Barrii and unnamed seedlings, were exquisitely beautiful. Mr. J. S. Arkwright, Presteign, was second, with unnamed seedlings.

The winning set of six varieties raised by the exhibitor came from The Donard Nursery Co., who had wonderfully fine examples all under

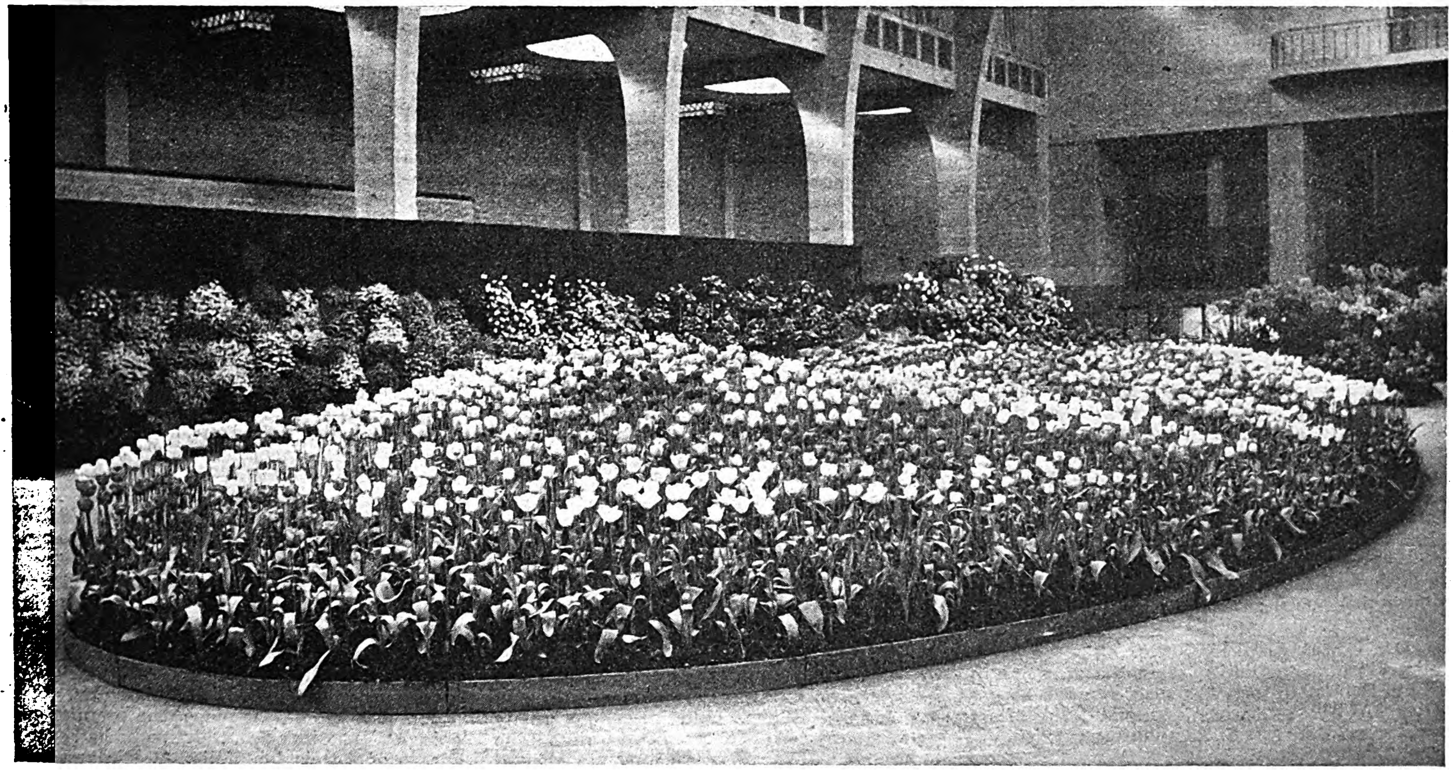


FIG. 169.—MESSRS. SUTTON AND SONS' GOLD MEDAL EXHIBIT OF TULIPS AT WESTMINSTER (see p. 316).

numbers; second, the Rev. T. Buncombe; third, Mr. J. E. Exley, Leeds. There were only two entries in the smaller class for three varieties raised by the exhibitor. Miss Pope, Northfield, was first, and Mr. H. A. Marriner, Billingshurst, was second.

The Cartwright Challenge Cup was offered for twelve varieties in commerce, one stem of each. First, The Donard Nursery Co., who showed handsome blooms of Seashell, Silver Plane, Sunstar, Kenbane, Firetail, Festive, Brimstone and Mitylene. The second award went to Mr. W. B. Cranfield, who had choice specimens of Seashell, Solleret, White Chevron, Helmet and Lady Moore. In a smaller class for six varieties in commerce, Dr. D. R. Acheson won first prize, and the Rev. T. Buncombe, second prize. The only exhibitor in the class for three varieties in commerce, one stem of each, was Mr. J. E. Exley, who showed a very creditable set.

The Walter Ware Challenge Cup, offered for six obvious Triandrus seedlings, one stem of each, was won by Mr. W. B. Cranfield, with pleasing flowers of Venetia, Waterfall, Maid Monica, Harvest Moon, Silver Cloud and No. 442; second The Donard Nursery Co.; third, Mr. W. A. Watts.

The White Daffodil Trophy always attracts a good entry. Mr. Guy L. Wilson was first with a splendid collection which included Kantara, Beersheba and unnamed seedlings; second, The Donard Nursery Co., whose best flowers were Askelon and Beersheba.

The Leamington Challenge Cup, offered for six varieties with red coronas, one stem of each, was won by Mr. Guy L. Wilson, who had Peter Lower, Torrid, Copper Bowl, Kilter and unnamed seedlings in fresh condition and first-rate quality; second, Mr. J. Lionel Richardson, Waterford, with high quality blooms of Rodosto, Radium, Red Sun, Balaclava, Folly and Stamboul; third, Mr. W. A. Watts.

The Arkwright Challenge Cup, offered for six bicolor Trumpet varieties, one stem of each, was also won by Mr. Guy L. Wilson, with excellent flowers of Jack Spratt, 18-26, C. B., Rosemorran Giant, 16-101 and 18-117; second, Mr. J. S. Arkwright; third, The Donard Nursery Co.

The Williams Challenge Cup, offered for six varieties of yellow shades without red colouring in the cup, was won by Mr. Guy L. Wilson, who had magnificent flowers of Hopeful and Flava; second, The Donard Nursery Co., whose flowers of Brimstone and Cleopatra were of outstanding merit; third, Mr. J. S. Arkwright.

The Dr. Lower Challenge Cup, offered for six yellow Trumpet varieties, one stem of each, raised by the exhibitor, was also secured by Mr. Guy L. Wilson, with a splendid lot of flowers; second, Mr. J. S. Arkwright; third, the Rev. T. Buncombe.

Amateur Classes.

There were six splendid entries in the class for twenty-four varieties of Daffodils, three stems of each, and the quality of the blooms throughout was of a high standard of excellence. Mr. G. H. Furness, Burnham, was placed first with a clean, well set-up collection, including the varieties Great Warley, Macebearer, Croesus, Buttercup, Ivorine and Lord Roberts; second, Mr. W. Fitzherbert, who had handsome blooms of Homer, Dawson City, Lady Moore, White Sentinel, Selina and Malone; third, Miss Hinchliffe, Instow. The best half-dozen Trumpet varieties came from the last-named exhibitor, Mr. G. H. Furness, Burnham, being second. Miss Hinchliffe also had the leading set of three varieties, one stem of each, raised by the exhibitor; Mr. A. H. Bassano, Old Hill, Staffordshire, was second.

In the class for six Incomparabilis, Mr. G. H. Furness scored, showing very fine blooms of Croesus and Leontes; second, Mrs. E. V. Butler, Tewkesbury. The last-named was successful in classes for (1) six Barrii varieties and (2), six Leedsii varieties. Mr. G. H. Furness was placed second in each of the above two classes, and first for three varieties of Tazetta and Tazetta hybrids. Miss Hinchliffe excelled in the class for three varieties of Poet's Daffodils, and Mr. G. H. Furness won the Cartwright and Goodwin Silver Vase offered for six varieties (any divisions). Dr. D. R. Acheson was second in each of the two foregoing classes.

Mr. W. Fitzherbert won first prizes for (1) twelve varieties of Daffodils; (2) six Trumpet varieties; (3) six Incomparabilis varieties; (4) six Barrii varieties; (5) six Leedsii varieties; (6) six Poeticus varieties and (7), a bowl of Daffodils. In the last-named class, the Rev. T. Buncombe was second, and Miss Pope, third. Miss Pope was awarded first prize for a prettily arranged table (about three feet square) of hardy spring flowers.

Medal Awards.

The Birmingham Botanical and Horticultural Society's Medals were awarded as follow:—Classes 1 to 29: Silver Medal to The Donard Nursery Co., with 170 points; Bronze Medal to Mr. Guy L. Wilson, with 74 points. Classes 15 to 29 and 30 to 41: Silver Medal to The Donard Nursery Co., with 93 points; Bronze Medal to Mr. Guy L. Wilson, with 64 points; Classes 15 to 29 and 43 to 57: Silver Medal to Mr. W. Fitzherbert, with 64 points; Bronze Medal to Mr. G. H. Furness, with 49 points.

Honorary Exhibits.

Messrs. Barr and Sons were represented by an extensive display of beautifully arranged Daffodils. Of the host of varieties included in this very fine collection, the under-mentioned were conspicuous:—Susette, Red Gauntlet, Kingdom, Scarlet Gem, Grecian Beauty, White Nile, Beersheba, Fantin Latour, Eskimo, John Evelyn, Moira O'Neill, Dorcas and White Emperor (Gold Medal).

Mr. Guy L. Wilson had a choice collection of Daffodils, including such varieties as Suvla, Beersheba, Kantara, Ettrick, Carmel, Peter Lower, May Molony, Crucible, Market Glory, Dragoon and many unnamed seedlings (Gold Medal). Mr. W. A. Watts had one of the biggest and best groups of Daffodils he has ever staged at Birmingham. The flowers, set principally in low bowls and vases and artistically arranged, were fresh and clean, and included many varieties suitable for garden and market purposes. A few varieties of outstanding merit were Joker (intense orange crown), Hernia, Mrs. Watts, Lemon Ice, Jorrocks (very fine), Owen, Girdle, Lloyd. Minafon, Jason, Estelle and Jingle (Gold Medal).

Messrs. R. H. Bath, Ltd., staged a handsome group of Daffodils which included most of the best garden and market varieties (Gold Medal). Messrs. Allwood Brothers made a feature of Carnations and Pinks, bold masses of many varieties being seen to excellent advantage (Gold Medal). Messrs. Baker were represented by a selection of floral designs, hardy shrubs, and rock and border plants in variety (Gold Medal). Mrs. Lower, Malvern Wells, contributed about thirty varieties of seedling Daffodils for which a Silver-gilt Medal was awarded. A similar award was also made to Mr. W. A. Milner, Sheffield, for an interesting collection of seedling Daffodils. Messrs. Cartwright and Goodwin received a Silver Medal for Daffodils. Mr. J. L. Richardson contributed a small, choice lot of seedling Daffodils, and Miss K. Morris, Kidderminster, arranged a miniature garden.

PROFESSIONAL GARDENERS'.

The monthly meeting of this Association was held at the Guildford Hotel, Leeds, early in April, Mr. J. T. McCormack presiding.

Mr. Garvin Little, Gardener at Studley Royal, Ripon, lectured to a large gathering on "Vegetables for Exhibition," dealing in turn with Onions, Leeks, Celery, Peas, Cauliflowers, Carrots, Potatos and Parsnips, as eight subjects which, if grown well, will hold their own at any show. A very good discussion followed. After a formal vote of thanks was accorded Mr. Little, who had to leave, the members spent another interesting hour discussing the wording of show schedules and the principles of judging.

THE CORNWALL SPRING SHOW.

The Cornwall Spring Show, which was held at the City Hall, Truro, on April 23 and 24, provided an extraordinary display of choice and out-of-season flowers. Many of the flowering shrubs exhibited can only be grown out-of-doors in Cornwall. Rhododendrons were not exhibited in such a large quantity as in previous years, although the collection of species and hybrids displayed by Mr. J. C. Williams, of Caerhays, attracted much attention, well-grown specimens included in his exhibit being R. Cunningham's Yellow, R. Augustinii, R. Loderii and R. arboreum. Successful exhibitors in the competitive Rhododendron classes were Major G. H. Johnstone, Trewithen; Mr. Barclay Fox, Penjerrick; Mrs. Hext, Mr. Magor, Lamellyn; and Mr. P. D. Williams, Lanarth, the outstanding blooms being of R. Cornish Cross, R. Aucklandii and R. campylocarpum.

Another centre of attraction was the wonderful display of flowering shrubs in the class for twelve vases. As usual, the Rev. A. T. Boscawen, Ludgvan, excelled. A vase of Podalyria was very striking, while other very attractive subjects in this exhibit were Sophora tetraptera, Epacris mineata, E. onosmaeflora, Staphylea holocarpa and Erica melanthera. The second prize went to the Hon. Mrs. Colborne Vivian, St. Martin, who showed fine sprays of Clematis indivisa, Clianthus puniceus and Acacia longifolia.

Tulips were not so much in evidence as usual, the best exhibit being staged by Miss Wingfield, Gulval, whose finest blooms were of Moonlight, Zwanenberg, and General French. The competition in the Anemone class was very keen, Mrs. Henderson Bull, Falmouth, staging some extraordinarily fine specimens, her new pink strain being much admired; this received a special award.

Assorted spring flowers were well represented and rock gardens also occupied a prominent place. In the former section, Miss Lavender Williams, St. Keverne, took first place, and her exhibit contained some well-grown sprays of Omphalodes cornifolia, Vinca herbacea, Tulipa Clusiana, and Lysichytum camtschatcense; Mrs. Paynter, Boskenna, was second, and she included Celsia cretica, Primula helodoxa and Myosotidium nobile in her exhibit. Another subject which attracted attention was a fruiting branch of Araucaria Bidwillii, put up by Mr. Barclay Fox, of Penjerrick.

Although somewhat late in the season, a fair number of Narcissi were staged, and in the class for six vases, Mr. F. G. Lawson, Truro, was first, and included excellent examples of Seville, Cheerfulness, Hera and Firetail.

As one would expect at this show, Acacias occupied a prominent place, the premier award going to Viscount Falmouth, who had excellent sprays of Acacia longifolia, A. Riceana and A. melanoxylon. In the Erica class, Mrs. Powys Rogers, of Tregye, was successful, her exhibit containing a grand spray of Erica arborea var. Mr. Robert.

The trade was well represented and in the Narcissus section, Messrs. J. C. Martin and Messrs. W. G. Lawson had very fine exhibits. The most noticeable blooms in the former's group were Great Leap, Silver Penny and Water Lily, and this exhibitor had some well-packed commercial boxes. In the latter's there were well-grown flowers of Croesus, Seville, Owen, Sprite and St. Bernard. Mixed displays were staged by Messrs. Treseder and Co. who showed choice shrubs and alpines, and the Devon Rosery, who made special features of Clematises, Roses, Acacias and Hippeastrums. Messrs. R. Veitch and Son, as usual, had a most interesting exhibit containing many choice and uncommon plants. Other exhibitors were Messrs. Ruse, Messrs. Davis, Messrs. Cocking and Messrs. Allwood Brothers, who had a very fine display of Carnations. A fine non-competitive exhibit was also staged by Mr. Henry Hodge, of St. Austell.

The Gardeners' Chronicle Silver-gilt Medal was won by Mr. James Allen, Truro, and the Silver Medal by Mr. R. Nancarrow, also of Truro.

RHODODENDRON ASSOCIATION.

April 30 and May 1.—The fourth show of Rhododendrons, which was held in the New Horticultural Hall, Westminster, on these dates, well illustrated the great diversity and garden possibilities of these valuable and interesting shrubs. In spite of the unfavourable weather, which prevented several members of the Association from setting up their usual collections, there was a very good show. The central part of the hall was filled with the groups of the various classes, and these made an exceedingly attractive display. Section B of the R.H.S. Floral Committee met in the morning of the first day, under the chairmanship of Mr. Charles T. Musgrave, and recommended the following awards to Rhododendron novelties.

Awards of Merit.

Rhododendron Keiskii.—This comparatively dwarf, evergreen species was introduced from Japan in 1908. The plant shown was compact and well-flowered. The loose trusses were composed of from two to five pale yellow flowers about an inch-and-a-half in diameter. It belongs to the 'Triflorum' series. Shown by Mr. Harry White.

Rhododendron semanteum.—This pretty little species was discovered by Forrest on the Muli Mountains, south-west Szechuan, at a considerable altitude, in 1921. It belongs to the 'Lapponicum' series. Several very dwarf and somewhat spreading plants were shown, and these were in full bloom when less than three inches in height. The flowers, which expand widely, are relatively large and of deep rosy-mauve colour. Also shown by Mr. Harry White.

Rhododendron tephropeplum.—This was one of the most delightful of the small-flowered Rhododendrons in the show. The species was discovered by Farrer in Upper Burma at over 10,000 feet altitude, in 1920, and it is placed in the 'Campylogynum' series. It is an erect little bush, and each shoot seems to be terminated with rounded heads of bell-shaped flowers, which are shell-pink outside and blush shaded within. The leaves are lanceolate-acuminate. Shown by Lady Aberconway (gr. Mr. F. C. Puddle), Bodnant, North Wales.

Groups of Rhododendrons.

The competition in the class for a large group of Rhododendron plants shown by a trade grower was not quite so keen as on former occasions. Messrs. R. Gill and Son were awarded the first prize for an imposing display. Probably from lack of time, name cards were sparsely used. The chief sorts so well shown were fragrantissima, delicata, Dalhousiae, neriiflorum, sino-grande, decorum, bullatum and Thomsonii. In their neat second prize display, Messrs. R. Veitch and Son included well-flowered plants of exoniense, Loder's White, Unknown Warrior, Thomsonii × campylocarpum of rich colour, and Cunningham's Sulphur. In his collection, Mr. G. Reuthe included Hodgsonii, Falconerii and Elizabethiae to show the great luxuriance of their foliage.

The group of plants sufficiently hardy to be grown in the open at Kew provided masses of flower. The first prize group, arranged by Messrs. R. Wallace and Co., was especially effective. In the middle there were floriferous specimens of Countess of Athlone, Bagshot Ruby, General Cavendish and unnamed seedlings of considerable beauty, while the body of the group was made up of Hugh Koster, Brabantia, Lady Stuart of Wortley and other good varieties. In their second prize group, Mr. W. C. Slocock placed several lovely plants of Goldsworth Pink, with Vanity, Mrs. W. C. Slocock, Mrs. May Ashley and a good R. campylocarpum seedling. Messrs. J. Cheal and Sons were third.

The groups of plants not in flower, selected to show their foliage value, were arranged at the far end of the hall and formed an excellent background to those in flower. The first prize group of Messrs. R. Gill and Son was particularly fine, and contained many plants which were decidedly ornamental, even though not in flower. In addition to luxuriant leaves several, such as Mrs. Hamilton and argenteum, have brightly coloured bracts. Messrs. Waterer, Sons and Crisp were second, with a good selection of the hardier hybrids.

The two groups of Azalea plants, shown by trade growers were of very distinct character, and the judges took refuge in awarding equal first prizes to Messrs. J. Cheal and Sons and Messrs. R. and G. Cuthbert for their exceedingly attractive collections. The former included well-flowered plants of coccinea speciosa, Aide, narcissiflora and a number of Japanese varieties. The exhibit of Messrs. R. and G. Cuthbert contained Ghent and Mollis varieties of vivid colouring, and also some good rustica hybrids.

On account of exceptionally severe frosts, during recent nights, which destroyed many buds as well as open flowers, the customary collections were not contributed from Bodnant, North Wales in the Amateurs' Classes, and the competition in the class for a group of plants or cut trusses was confined to two exhibitors. The first prize was awarded to Lionel de Rothschild, Esq. (gr. Mr. A. Bedford), Exbury, Hampshire, for a graceful and floriferous group composed chiefly of the medium-sized and small-flowered sorts. In the background there were large plants of Augustinii, chartophyllum praecox, reticulatum, ambiguum and ciliatum, while in the front there were several very attractive alpine hybrids and seedlings of species collected by Forrest. The second prize was awarded to Admiral A. W. Heneage-Vivian (gr. Mr. W. Leith), Clyne Castle, Swansea, for a very showy exhibit in which prominence was given to many splendid trusses of R. niveum hybrids. He also staged admirable sprays of eximeum, a Thomsonii hybrid of intense colour, Aucklandii, Glory of Penjerrick and some lovely hybrids of R. Falconeri.

There were two smaller groups of cut flowers and in this class the first prize was awarded to J. C. Williams, Esq. (gr. Mr. W. Michael), Caerhays Castle, Cornwall, who staged especially good vases of neriiflorum, Keysii, decorum forms, floccigerum and ixeuticum. On the other side of the hall a handsome exhibit from Colonel R. Stephenson Clarke (gr. Mr. H. Fleming), Borde Hill, Sussex, was awarded the second prize. This included magnificent trusses of Dr. Stocker, a crimson Arborcum, Fortunei × Thomsonii, Queen Wilhelmina and Earl of Athlone. The best twelve trusses of distinct species was shown by the Earl of Stair (gr. Mr. R. W. Rye), Lochinch, Wigtownshire, who included arboreum, Falconeri, bullatum and neriiflorum. A. M. Williams, Esq. (gr. Mr. R. N. Gregory), Werrington Castle, Cornwall, was second. Admiral Heneage-Vivian was first with twelve hybrids and he showed lovely forms of niveum, eximeum, Broughtonii × Fortunei and Glory of Penjerrick. Lady Aberconway, who was second, had good trusses of Richard Gill and Queen Wilhelmina. Admiral Heneage-Vivian was first with four hybrids raised by the exhibitor, showing Singleton Blue, a niveum hybrid, eximeum × niveum and eximeum × Falconeri. P. D. Williams, Esq., Lanarth, Cornwall, was second.

The Earl of Stair, who included lovely trusses of Falconeri and arboreum, had the best three species, and Lionel de Rothschild, Esq., showing splendid trusses of Queen Wilhelmina, Lady Forster and a campylocarpum hybrid, was first for three hybrids.

Single Trusses.

Although the competition generally was not quite so large as last year, there were many very good trusses staged, and in some of the classes the competition was very keen. First prizes were awarded to the following: Sir John Ramsden, Bt., Bulstrode, Bucks., for Loder's Pink Diamond, in the class for the best hybrid, and for a vivid Thomsonii × neriiflorum in the class for a truss of any hybrid raised by the exhibitor, which had not previously been awarded a prize as a single truss; A. M. Williams, Esq., for R. lacteum in the class for the best species, R. russatum, 'Lapponicum' series, R. Baileyi, 'Lepidotum' series, R. oreotrephes and for a truss of the 'Sanguineum' sub-series; P. D. Williams, Esq., for R. neriiflorum, a blood-red Arboreum, a Fortunei variety, R. Morii, 'Barbatum' series, and Hinodigerii (an evergreen Azalea); the Earl of Stair for R. campanulatum, R. taliense and R. arboreum; G. H. Johnstone, Esq., Trewithen, Cornwall, for a beautiful R. Aucklandii × Pink Seedling, trusses of R. fictolacteum, R. Griffithianum, R. irroratum, Azalea Weyrichii and R. Davidsonianum; The Viscountess Falmouth, for R. Falconeri and R. Gill's Triumph; Lionel de Rothschild, Esq., for R. 'Lacteum' series, R. 'Maddenii' series, R. Thomsonii and R. lutescens; N. Vivian, Esq., for R. amoena, R. eximeum × Falconeri and R. Loderi; Gerald E. W. Loder, Esq., Wakehurst Place, Ardingly, Sussex, for R. campylocarpum, and a pink R. adenopodium; J. J. Crossfield, Esq., for R. 'Megacalyx' series, and R. bullatum; Lady Aberconway, for R. rubiginosum, R. Souliei, and R. Richard Gill; J. B. Stevenson, Esq., Tower Court, Ascot, for R. Glory of Penjerrick and R. dichoranthum × neriiflorum.

The best spray of an evergreen Azalea was of Shin Seikai, shown by Admiral Heneage-Vivian. A good blue fastigiatum × Augustinii, shown by A. M. Williams, Esq., was first in the class for a spray of an alpine species. Messrs. R. Wallace and Co. had the best six trusses of hardy hybrids raised by the exhibitor; Lionel de Rothschild, Esq., was first with six vases of Rhododendron foliage. The best foliage Rhododendron plant was a magnificent example of a R. Falconeri hybrid, shown by Admiral Heneage-Vivian. The prize offered for the best Rhododendron plant in the show was awarded to Mr. W. C. Slocock for a shapely specimen of the variety Dairy Maid.

WAKEFIELD PAXTON.

"Errors in Gardening" was the title of an instructive lecture delivered at the meeting of this Society, at the Woolpacks Hotel, by Mr. C. Oglesby, Sandal, on April 20. Mr. J. Howes occupied the chair.

After some preliminary remarks concerning the ethics of mistakes and the resultant knowledge and experience gained—if the gardener cared to assimilate them—the lecturer dealt with the choice of tools, digging, manuring, liming, seed-sowing and planting, and he concluded by saying that many of his successes had been gained by taking note of the errors he had made. A lively discussion followed, in which many of the members gave their views on the various topics dealt with.

Mr. G. Hartley proposed a cordial vote of thanks to Mr. Oglesby for his able lecture, the motion being seconded by Mr. T. Quarton, and supported by Messrs. C. Gibbs, C. T. Wilby and C. Elliot.

NATIONAL PRIMULA AND AURICULA.

(Southern Section.)

April 23 and 24.—This special flower Society held its annual show on these dates, and, having seen it, we wonder why; for, so far as the competitive section was concerned, it was a travesty of a show and unworthy of an association which has any pretentions to the designation of "National." That the exhibits were few, and they could well have been set out on an ordinary dining table, is in itself no matter for stricture; may be there were extenuating circumstances—but there were no signs of intelligent organisation, no indications of the exhibits in the various classes, and it appeared as though the plants were simply dumped down on the staging. How the judges discriminated between them passes our comprehension, but as awards were made we assume they possessed inside information. We have ceased to hope that the Southern Section of this old and one-time highly respected floricultural Society will exercise its legitimate functions of popularising its special flower and of educating the great show-attending public concerning it; and, so far as we could discover, there was no one connected with it present on either day, nor was there any available literature concerning the Society or its flower. If, as we can only conclude, the show which was held at the new Horticultural Hall is the best the Southern Section can produce, we suggest that the best interests of the Section and the flower would be served if its weaknesses were kept private for a season, and its position in the horticultural world seriously considered.

The chief exhibitor and prize-winner of Auriculas was Clive Cookson, Esq. (gr. Mr. W. J. Stables), Nether Walden, Hexham-on-Tyne, but in view of the circumstances, we hesitate to name any plants, except his two premier varieties. His premier Show specimen was Wm. Brocklebank, a very good green-edged sort, while his premier Fancy Auricula was Robb's Fancy. Clifford Burton, Esq., Selsey, was awarded the first prizes for four and for two alpine Auriculas. The first prize six Primulas were small plants of such species as P. frondosa, P. cortusoides and P. hirsuta, shown by R. J. Gummer, Esq., New Barnet. Nearly all the first prizes for Polyanthuses and Primroses were, as usual, awarded to Mr. G. W. Miller, who was also placed first in the class for a group of Primulas or Auriculas, with Mr. R. S. Milford second. Mr. James Douglas set out a non-competitive collection of Auriculas.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Thursday, April 18, at the Town Hall, Manchester, in conjunction with the Royal Botanical and Horticultural Society of Manchester and the Northern Counties, at the Spring Show, the members of Committee present were Mr. J. B. Adamson (in the chair), Mrs. Bruce, Miss Wrigley, and Messrs. A. Burns, A. Coningsby, J. Evans, A. Keeling, D. McLeod, W. J. Morgan and H. Arthur (Secretary).

Mr. S. Low was invited to sit with the Committee.

First Class Certificates.

Cattleya Susan var. Vestal (*Susanne Hye de Crom* × *Cowaniae alba*).—A large flower of good shape, with pure white sepals and petals, with orange lines in throat; *Odontoglossum Doreen var. Perfection.*—A full, round flower, beautifully marked with crimson. From J. B. Adamson, Esq.

Phalaenopsis Elizabethiae (*amabilis* × *Rimestadiana*).—A very fine form; *Odontioda Mildred* (*Aphrodite* × *Naomi*), a large flower of good shape, deep maroon, lip crimson, bright yellow anthers. From Messrs. A. J. Keeling and Sons.

Odontoglossum crispum var. Osiris.—A large flower of the Doin type, lip spotted with deep crimson. From Mr. John Evans.

Cymbidium Giant Rose (*Alexanderii* × *Schlegelii*).—A finely-shaped flower, soft rose with light crimson spots on the lip. From Messrs. Stuart Low and Co.

Awards of Merit.

Brasso-Cattleya Apollo var. majestica; *B.-C. Doris, Langley var.*; *Dendrobium nobile, Towneley Monarch*; *and Cattleya Linda var. Vestal.* From J. B. Adamson, Esq.

Cymbidium Eagle; *Odontioda Elaine, Jarvisbrook var.*; *Odontoglossum percultum, Jarvisbrook var.*; and *O. amabile, Jarvisbrook var.* From Messrs. Stuart Low and Co.

Miltonia St. André var. Distinction, and *Cypripedium Mona var. Virginale.* From Messrs. A. J. Keeling and Sons.

Cultural Certificates.

To Mr. A. Burns, for Miltonia Phalaenopsis, and Sophronitis grandiflora; Mr. J. Howes, for Dendrobium Wardianum and D. infundibulum; and to Mr. Selby, for Lycaste Skinneri.

Groups.

J. B. Adamson, Esq. (gr. Mr. J. Howes), Blackpool, showed a group to which a Gold Medal was awarded. It contained Cattleyas in variety; Odontoglossum crispum var., O. Faith, O. Diamond, O. Meredithiae, O. Excellens, and O. Colossus; Dendrobium nobile var. alba, D. Thwaitesiae and D. thyrsiflorum; Bifrenaria Harrisoniae, Angraecum Sanderianum, and Masdevallia ignea.

Messrs. A. J. Keeling and Sons, were also awarded a Gold Medal for a group of Cattleyas in variety; Odontoglossum Miguelito and O. Rolfeae; Odontioda Queen Mary, O. Brilliant, O. Brewii and O. Gladys; Epidendrum Endresio-Wallisii; Miltonia Charlesworthii, M. Lena and M. Venus; Phaius Sanderiana; Dendrobium atro-violaceum and Trichopilia suavis. Mrs. Bruce and Miss Wrigley (gr. Mr. A. Burns), Bury, staged a group to which a Large Silver-gilt Medal was awarded. They showed Lycaste Skinneri vars. Rosalba, Pax, Robin, and delicatissima, and L. lassiglossa; Laelio-Cattleya Canada; Brasso-Cattleya Cliftonii var. magnificum; Miltonia Bleueana var. Reine Elizabeth, and Masdevallia Kimballiana. Captain W. Horridge (gr. Mr. A. Coningsby), Bury, was awarded a Large Silver Medal for a group of Dendrobiums; Odontoglossums and Odontiodas, Laelio-Cattleya Beatrice, and Sophronitis grandiflora.

Mr. John Evans was also awarded a Large Silver Medal for a group of Cypripediums in variety, including C. Alva, C. Christopher and C. Boltonii; Cymbidium Erica Sander and C. Joy Sander, and Lycastes.

Messrs. Stuart Low and Co. showed Cymbidium Alexanderii var. roseum and Odontioda Sanderae. Mrs. Hollas (gr. Mr. Selby), Grimsaigh, sent Lycaste Skinneri; and Mr. D. McLeod exhibited Odontoglossums in variety.

READING GARDENERS'.

The Annual Supper and Smoking Concert of this Association was held in the Abbey Hall, by kind permission of Messrs. Sutton and Sons, on the evening of April 10, and proved a most enjoyable and successful affair. The President, Mr. Frank E. Moring, presided. After the loyal toast had been given, a splendid musical programme was enjoyed. During the proceedings, the toast of "The President" was given by Mr. Councillor T. Waldron, and was received with musical honours. The tables were beautifully decorated with Cyclamens, Tulips and Daffodils by Mr. E. J. Dove.

Obituary.

William Richard Carles.—A fortnight ago, there passed away in his sleep, at the age of eighty, one to whom all lovers of beautiful flowers will ever owe a great debt—William Richard Carles. On leaving Marlborough in 1867, he entered the Chinese Consular Service, and as Consul General in 1900 rendered conspicuous service by his defence of Tien-Tsin against the Boxers. For this he received the C.M.G. He spent one of his furloughs in Corea, and came across the Viburnum which now carries his name—Viburnum Carlesii, and was able to send home, I believe to Kew, material to which the plants now so widely spread owe their existence. Such a benefactor deserves to be remembered. *An Old Marlburian.*

John M. Hunter.—We learn with regret, from an American contemporary, of the passing of Mr. J. M. Hunter, who, before going to America in 1884, occupied several important horticultural positions in this country. He was born at Seaham, Durham, and he started gardening at the age of twelve, in the gardens of the Marquis of Londonderry, at Seaham Hall. From there he went to the John Harrison Rose Nurseries at Catterick Bridge, and later he returned to private service at Sockburn Hall, Durham. His last position in this country was that of Superintendent of Harrogate Cemetery. He and his wife, with their four children, emigrated to the United States, where, after filling several important horticultural posts, he finally started business as a landscape gardener and florist at Englewood, New Jersey. Within a few years, however, his health broke down and he finally sold his business and settled down in retirement in a home he bought at Long Beach, California. Later, he sold this property and returned to New Jersey to help his son start a florist's business at Leonia, but he never recovered his good health, and two weeks before his death (on March 29) he was stricken with apoplexy while working in the greenhouses, and to this he succumbed. He died at the age of seventy-seven years, respected by horticulturists throughout the States, and is survived by his wife, two sons, and three daughters, to whom we extend our deep sympathy.

Dr. Robert Ridgway.—Horticulturists in general are familiar with the name of Dr. Robert Ridgway, as the compiler of what may be termed the standard work on colour—*Ridgway's Color Standards and Color Nomenclature,* and will regret to learn of his death, at the latter end of March, at the age of seventy-eight. Dr. Ridgway, who was born at Mount Carmel, Illinois, in 1850, was a prominent American ornithologist; he was the author of many works connected with bird life, and belonged to practically every important ornithological society throughout the world.

ANSWERS TO CORRESPONDENTS.

Filling Hollow Trees.—*C. F. D.* A plastic mixture of cement is about the best filling for holes in stems of trees, but the holes must be thoroughly cleaned before the material is placed in position, and then it must be pressed firmly into place.

"Fire" in Tulips.—*J. S. B.* The Tulips are affected with "fire," due to Botrytis tulipae. Remove and burn all infected bulbs; collect and burn diseased foliage. The soil surounding infected bulbs should be taken away and buried in some other part of the garden where bulbs are never grown. Lift all the bulbs after the foliage has died down, and examine them for sclerotia (dark resting-bodies of the fungus) on outer scales and discard all those with sclerotia on them. Do not plant Tulips on infected ground.

Hyacinth Bulb Badly Ripened.—*W. W.* The Hyacinth bulb was quite healthy. The trouble is that the basal plate had become hardened and no root system was evident. This trouble occurs in Hyacinth bulbs through defective drying. The basal plate becomes covered with a corky layer through which the growing points of the roots are unable to penetrate. It is suggested that the bulbs be lifted after cutting off the flower spike and have the hard layer lightly pared off with a sharp knife, after which replant in good soil. This may induce root formation.

Names of Plants.—*A. E. W.* Probably Tulip Scarlet Emperor.—*A. J. D.* 1, Cupressus Lawsoniana; 2, Cupressus Lawsoniana var. compacta; 3, Thuya orientalis.

Privet Hedge Overhanging.—*M. T.* If B. allows his hedge to overhang A.'s land, it constitutes a nuisance, and A. should give B. formal notice to abate such nuisance by cutting back the hedge, and inform him that, in the event of his not doing so within a reasonable time, A. will himself abate the nuisance and charge B. with the cost.

Perpetual Carnations.—*B. N.* Your trouble may arise through two causes:—Firstly, it may be due to overfeeding during the dull months of the year, as this would cause sappy growth; secondly, your young growth may be attacked by thrips, these pests being very partial to the variety Carola, especially overfed plants. This latter seems the likely cause of your trouble, for you state the variety Winter Glow shows no signs of forming flower buds. This variety is in no way related to Carola. Spray the tips of your plants with Nicotine, using half-a-teaspoonful to four gallons of water. Spraying must be persevered with until the stock is cleared of the pest. Corola requires more warmth during the winter months to open its flowers than most of the other varieties.

Communications Received.—F. H.—G. C.—T. R.—E. E. Y.—A. C. C.—D. S.—A. D.—J. C.—P. C. S.—F. H. W.—A. H.—F. J.—R. W. T.—W. G. C.—R. H. G.

THE Gardeners' Chronicle

No. 2211.—*SATURDAY, MAY* 11, 1929.

CONTENTS.

Alpine garden—
  Arenaria balearica... 344
  Raoulia australis ... 344
  Saxifraga Irvingii ... 344
Anisotome (Ligusticum) latifolia, Hook ... 345
Arable land, manuring 349
Arenaria norvegica ... 350
Bog and water garden—
  Symplocarpus foetidus 344
Book, notice of—
  Starting early Vegetable and Flowering Plants Under Glass 348
Bulb garden—
  Narcissus rupicola 349
Cacti at Chelsea Show 340
Cactus Society of America 339
Cavendish family and Royal Horticultural Society 341
Chelsea Show arrangements, 1929 ... 339
Chelsea Physic Garden 341
Chile and the Andes... 346
Fertilisers, phosphatic 339
Flower garden—
  Miscanthus japonicus 344
Flowers, the colours of 349
Fritillaria karadaghensis 341
Fruit blossoms, order of flowering and pollenation of ... 351
Gardeners pay and status 350
Hardy flower border—
  Centaureas, hardy... 345
Iris Society's Show 339
Kew notes from ... 348
Kew, Japanese Cherries at 340
King, the: A national thanksgiving ... 339
Plants new or noteworthy—
  Jacaranda atrolilacina 347
Potato pool in Scotland, proposed 340
Potato, the future of the 350
Rose garden for Guildford, a new 340
Scotland, garden notes from south-west ... 348
Societies—
  Glamorgan Spring Flower and Daffodil 353
  Norfolk and Norwich Spring Flower... 354
  Royal Horticultural 352
  Royal Horticultural of Ireland ... 353
Trees and shrubs—
  Cytisus hirsutus ... 344
  Prunus pendula ... 344
Vegetable garden—
  Beans, Runner ... 350
Volatile essential oils, antiseptic and cooling properties of ... 350
Wallrock, Mr. Samuel 340
Week's work, the ... 342

ILLUSTRATIONS.

Anisotome (Ligusticum) latifolia 345
Chile and the Andes, views of 346
Cymbidiums, Messrs. Sanders' Gold Medal exhibit of 341
Jacaranda atrolilacina 347
Narcissus rupicola 349
Rhododendron tephropeplum 348
Wallrock, Mr. Samuel 340

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 52·9°.

ACTUAL TEMPERATURE—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, May 8, 10 a.m. (Greenwich time). Bar. 29·9. Temp. 54°. Weather, Cloudy.

Phosphatic Fertilisers.

BROADLY speaking, it may be stated that the agricultural land of the world is in a chronic state of hunger. This land-hunger is primarily hunger for nitrogen, but in a scarcely less degree it is hunger for phosphates. Somehow or other the nitrogen and the phosphates put into the soil always disappear, either in the crop and ultimately in the animal which feeds upon it, or into the depths of the ocean in the case of phosphates, and into the ocean of air in the case of nitrogen. At all events, the nitrogen which the land wants so much occurs to the extent of countless millions of tons in the earth's atmosphere, where it exists "remote, unfriendly, alone." These facts have long been recognised and have led in the past three-quarters-of-a-century to increasingly intensive manuring. The nitrate deposits of Chile and the nitrogen residues won from coal in the process of manufacture of coke and gas were for long the chief sources of nitrogen fertilisers. Now these supplies are being augmented from the nitrogen of the atmosphere, and on so vast a scale is this manufacture of nitrogen-compound fertilisers carried on that for the first time in the history of the world the earth's vegetation bids fair to be sufficiently fed. All through the past ages it has suffered from nitrogen hunger. Similarly, the plant has, in the past, had to subsist on precarious rations of phosphates, and deficiency both of nitrogen and phosphates has limited the luxuriance of vegetation. A third element essential to plants and not infrequently present in insufficient quantities in soil is potash, and hence it is that anyone well practised in cultivation always thinks of fertilisers in terms of N.P.K., that is, nitrogen, phosphates and potash. Compound fertilisers consist, of course, of suitable mixtures of material composed of these three elements and in general, where intensive cultivation is practised, as in the garden and under glass, a compound fertiliser containing the right proportions of these materials is employed. But in agriculture, where lower yields are expected, and where costs of production are closely scrutinised, it is often advisable for the farmer to apply the one of these three types of fertiliser which his soil and the crop to be grown in it most requires. For each of these three essential elements serves special functions. Thus, as stated in the recently issued Leaflet No. 394,* phosphatic fertilisers serve five purposes. They bring about earlier development of the seedling plant, encourage root growth, prevent rankness of growth which occurs if an excess of nitrogen is present in the soil, hasten ripening, improve quality in grain and increase the feeding value of fodder crops. Phosphatic fertilisers are of many kinds—raw bones, bone-meal, steamed bone-flour, dissolved bones, superphosphate, basic slag and mineral or rock phosphates, to which list must be added the more recent and not yet generally available ammonium phosphate—a fertiliser which supplies in concentrated form both nitrogen and phosphates. Gardeners are fond of using bone-meal, which contains the gelatine of the natural bone, but, in agriculture, superphosphate is chiefly used. Superphosphate is, or should be, an ingredient of every Potato manure; it is good also for roots and cereals such as Barley after roots. Basic slag, as well as superphosphate, is used largely in grassland, and has done much to improve pasture both in this country and in Australia and New Zealand, where phosphatic fertilisers are being used on an enormous and ever-increasing scale. When basic slag is to be used as a source of phosphates it is important for the purchaser to make sure that it is of the right kind, that is, one which contains not less than sixty per cent. of its phosphoric acid in a form which is soluble in a two per cent. solution of citric acid. Fineness of grinding is also important, and anyone contemplating purchasing this fertiliser should study the pamphlet to which reference has already been made. Lastly, finely ground mineral phosphates have the merit of cheapness and are found to be suitable in a moist climate, and on soils very deficient in phosphates, and also on soils which are rich in organic matter and not abundantly supplied with lime. Everyone interested in the use of artificial fertilisers should procure the sectional volume of collected Leaflets No. 8, issued by the Ministry of Agriculture under the title "Manures and Manuring." It may be had for 9d. post free, direct from the Ministry, 10, Whitehall Place, London, S.W.

The King: A National Thanksgiving.—Now that the King has happily recovered from his severe illness there is a widespread feeling that the time has come for the nation to give expression to its gratitude by making donations to hospitals and various charitable institutions. Already one of the regular supporters of the Royal Gardeners' Orphan Fund has adopted the suggestion and, as his personal gift, has increased his usual £10 to £100 to be added to the Chairman's list at the Annual Festival Dinner of the Fund at the Savoy Hotel, London, on Wednesday next. It is not within the means of everyone to give so liberally, but we suggest that all whose pleasure and profit are in horticulture might well show their loyalty and gratitude by making a gift, according to their means, to this deserving charity. Donations of any amount would be gratefully acknowledged either by Mr. Samuel Wallrock, The Manor House, Stanmore, who will preside at the Dinner, or by the Secretary, 19, Bedford Chambers, Covent Garden, W.C.2.

Chelsea Show Arrangements, 1929.—The Royal Horticultural Society's great Spring Show will be held at Chelsea on Wednesday, Thursday and Friday, May 22, 23 and 24. On the first day there will be a private view for Fellows and their friends from 8 a.m. to 12 noon, and on Thursday, May 23, from 8 a.m. to 10 a.m. Only Fellows' and Associates' tickets will admit to the private view, but transferable as well as non-transferable tickets may be used. There will be no admission by payment on Wednesday, May 22, until 12 noon, and on Thursday, May 23, until 10 a.m., when the show will be opened to the public. Those who propose to submit new or rare plants for certificate should remember that the Committees will meet on Tuesday, May 21, the Joint Iris Committee at 4.30 p.m., and the Fruit and Vegetable, Floral A. and B., Orchid, and Narcissus and Tulip Committees at 5 p.m. All plants, etc., for certificate must be entered with the Secretaries of the respective Committees by 4 p.m., new Bearded Irises being entered with the Secretary of the Joint Iris Committee by 3.30 p.m. The Secretaries of the Committees will be in attendance to receive entries from 10 a.m. Vans will not be admitted to the Show grounds on Tuesday, May 21, after 2 p.m.

The Iris Society's Show.—The third Annual Show of this progressive Society will be held this year in the Royal Horticultural Society's new hall, on Thursday and Friday, June 6 and 7. This is the first occasion on which the Iris Society has attempted a two days' show, and every effort is being made to make it a success. In an endeavour to add further interest to the show, the Society is inviting deputations and exhibits from Continental and American Iris growers. The show will be opened at 12.30 p.m. of the first day by His Excellency the French Ambassador, and at 4.30 p.m. on the same day the Iris Society, the Royal Horticultural Society, and the English Speaking Union, will entertain members of the Garden Clubs of America to tea. At 11.30 a.m. on the second day, June 7, there will be a discussion on "Garden Irises," to be opened by Mr. R. W. Wallace, and at 3 p.m. Mr. P. R. Barr will deliver a lecture on "Iris Species for the Garden." Among the most important medals and trophies offered at this show are the Silver Medal of the American Iris Society, for the best twelve spikes of Bearded Irises of American origin or raising; the Iris Society's Challenge Cup (presented by Mrs. Philip Runciman), for the best exhibit of Irises staged by an amateur; the Gordon-Lennox Challenge Cup (presented by Lady Algernon Gordon-Lennox), for the best exhibit demonstrating the decorative value of Irises, on a space not exceeding seventy-five square feet (open to all); and the Christie-Miller Challenge Cup (presented by C. W. Christie-Miller, Esq.), for the best collection of Iris species, arranged in a space not exceeding thirty square feet. The Schedule may be obtained from the Hon. Secretary of the Society, Mr. G. L. Pilkington, Lower Lee, Woolton, Liverpool.

Cactus Society of America.—There has recently been a "boom" in Cacti and Succulent plants in America, and at all the principal shows these plants have occupied prominent positions, with the result that they now enjoy a fairly widespread popularity in the United States. One of the direct outcomes of this movement is the inception of the Cactus and Succulent Society of America, at San Fernando, California. A tract of dessert land, 1,000 acres in extent, situated in southern California, has been offered to this Society, as a donation, for the establishment of a garden, while a library is in course of formation and the issue of a monthly publication is assured.

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* *Phosphatic Fertilisers*; Leaflet No. 394; Ministry of Agriculture, 10, Whitehall Place, London, S.W.

Legacies to Gardeners.—Under the will of The Right Hon. Constance Emily, Baroness Eversley, of Abbotsworthy House, Kingsworthy, Winchester, who died on February 27, at the age of seventy-eight, Mr. Henry Spencer Miller, her head gardener, receives the sum of £1,000; Mr. Frederick Simmonds, gardener, receives £300; Mr. George Gregory and Mr. Ernest Young, under-gardeners, £100 each, respectively: and Mr. George Pinton and Mr. William Berry, both under-gardeners, £50 and £20 respectively.—The Right Hon. Samuel Hope, first Baron Hollenden, of Grosvenor Square, W., who died on February 18, left £100 to his gardener, Mr. R. G. Pringle, and a life annuity of £26 to the widow of his late gardener, Mr. Charles Davis.—Mr. Frederick M. Dickson, J.P., of Levenside, Haverthwaite, Ulverston, Lancashire, who died on February 3, left £200 to his gardener, Mr. T. Wilson, if in his service and not under notice at the time of his decease.

The Carnation "Year Book."—The 1929 issue of this official organ of the British Carnation Society will be welcomed by the members as, besides the usual business matter appertaining to the Society, it contains several instructive and interesting articles by competent Carnation authorities. For instance, Mr. C. Engelmann briefly outlines the progress of the Perpetual-flowering Carnation; Mr. L. J. Cook contributes a problematical article entitled "The Unexpected — with Carnations"; and Mr. T. Stevenson discourses on "What should be aimed for in New Carnations." Mr. Montagu C. Allwood gives "Some Hints on Perpetual-flowering Carnations," and Mr. F. W. Allsworth, the Hon. Secretary, deals with Carnation Growing at Kew and in Hyde Park. The publication is attractively illustrated and well printed. The joint-schedule for the summer and autumn shows of this Society, to be held on July 18 and 19, and November 20 and 21, respectively, has also been issued.

New Canadian Flowers and Fruits.—The Canadian Horticultural Council announces that twelve new varieties of plants were received for recording during 1928. These include one plant each of Geranium Nora Baldwin, Lilac Dr. F. E. Brethour, Astor Bosco Belle, Rose Canadian Jubilee, Crab-Apple Confederation, and Apple Golden Sunset. Two plants each were recorded of Iris Alice Aileen and I. Hochelaga; and of Strawberry What-a-flavour and Confederation; and three plants of Dahlia Kathleen Salmon, Mitchell's Favourite and Jean Trimbee.

Japanese Cherries at Kew.—Few trees in the outdoor garden rival the Japanese Cherries in their freedom of flowering and attractive beauty. The abundance of blossoms produced annually, even on small specimens three or four feet in height, may be attributed to the fact that only two or three of the single forms produce fruits, unless hand pollenated. In Japan, named varieties are numerous, but a selection of twelve or fifteen varieties will give a representative display of their beauty in British gardens. The flowering season extends over a period of five or six weeks, beginning with Prunus yedoensis early in April, while one of the last to fade, towards the end of May, is P. serrulata var. longipes; the Japanese name of this beautiful double-flowered Cherry is Oku-Miyako. This spring the flowering season at Kew is ten or fourteen days later than usual. About the middle of April P. Lannesiana var. Yemari opened the first of its delicate, single, pink blossoms. This was closely followed by P. serrulata var. spontanea with a profusion of small, white blossoms, and P. Lannesiana var. amabilis, a very attractive, semi-double, pink variety. One of the most distinct and showy is P. serrulata, with wide, out-spreading branches thickly clustered with double, white flowers. In direct contrast is P. Lannesiana var. erecta—Amonogawa of the Japanese—upright in habit, the branches studded with single, pink blossoms. Other good sorts are P. serrulata var. Sekiyama, the popular Hisakura of nurseries, with bronze-tinted foliage and rich rosy-red flowers; P. serrulata var. Fugenzo, better known in gardens as James H. Veitch; P. Lannesiana var. grandiflora—Ukon of the Japanese—with pale yellow blossoms; P. Lannesiana var. albida, a very free-flowering Cherry with large, fragrant, single, white blossoms; P. Sieboldii (syn. P. Watereri), slow in growth, with attractive, double, pink blossoms; and P. serrulata var. rosea—Cheal's Weeping Cherry—a beautiful weeping variety with double, rose-pink flowers.

Mr. Samuel Wallrock.—The Royal Gardeners' Orphan Fund has always been fortunate in its Chairmen for the Annual Festival Dinners, and, this year, the Committee is to be congratulated on having persuaded Mr. Samuel Wallrock to preside at the Savoy Hotel next Wednesday. In a sense, Mr. Wallrock is one of fortune's favourites, for he was able to retire from active business while still in the forties, with more than a competency. Those who knew him best were convinced that the retirement would be only temporary, and that the very qualities which enabled Mr. Wallrock to be in a position to follow the dictates of his fancy, would prevent him settling down to a life of comparative leisure. And this proved to be so, for within a comparative short space of time Mr. Wallrock took up his work again. From this it will be realised that he is gifted with almost unbounded energy, and brains and enterprise far above the ordinary, together with whole-hearted enthusiasm for all that he undertakes. In a comparatively short time, Mr. Wallrock has been many things besides a money-maker—with regard to the latter, it is enough to state that, among other activities, he was responsible for the conversion of a part of Mayfair into business premises. He has been President of the Incorporated Society of Auctioneers and Landed Property Agents. He is a member of the Worshipful Company of Feltmakers and a Freeman of the City of London; for many years he held a commission in the 2nd City of London Fusiliers, and has been associated with many other affairs; in fact, his activities have made him one of the most widely reported men in the country. As an amateur gardener Mr. Wallrock is becoming increasingly well-known for the excellence of his exhibits at various shows in the provinces and, more recently, his large collections of grand Cinerarias and Schizanthuses at the R.H.S. meetings. He is still actively engaged in the making of a large garden at Stanmore, in Middlesex, and this is fast becoming one of the most interesting in the country. Another of Mr. Wallrock's hobbies is the liberal support of deserving charities and, being a family man—and a gardener—the Royal Gardeners' Orphan Fund makes an irresistible appeal to him, consequently he has devoted a considerable amount of time towards the success of the Chairman's List for the Festival Dinner on Wednesday, May 15.

MR. SAMUEL WALLROCK.

New Rose Garden for Guildford.—Thanks to the initiative of the Guildford and District Rose Society, Guildford is to have its first public Rose Garden. The situation is in the old gardens attached to the mansion in Stoke Park. The property was purchased by the Corporation four years ago, but owing to a lease, the gardens have but recently been taken over. The President of the Rose Society, Councillor William Harvey, is also the Chairman of the Public Parks and Pleasure Grounds Committee, which happy combination may have had something to do with negotiations between the Society and the local authorities. The offer of the Rose Society to prepare, plant and be responsible for the maintenance of a Rose Garden found a ready and grateful acceptance. A good deal of spade work was needed to reclaim a section that had run to waste in the old gardens, but about three-quarters of an acre has been reconditioned and three large beds have been planted with several hundreds of Roses in many varieties. This generous and public-spirited work has been carried out without any charge on the funds of the Society. The planting and pruning has been done voluntarily, but with such adverse climatic conditions to contend with, and late planting, no great display is expected this year, although it is hoped that these gardens, charmingly situated, will eventually become not only a beautiful and restful retreat for the general public, but also a place where Rose-lovers will be able to learn a great deal about Rose cultivation by seeing the varieties growing that have been found to do best in this neighbourhood, and by watching the various operations of rose culture in their due seasons. Remembering Mr. Harvey's well-known love for Roses, this is probably but the beginning of the Society's public work in this highly favoured town.

Cacti and Succulent Plants at Chelsea Show.—A special and unique feature of the Chelsea Show will be an extensive display of Cacti and Succulent plants, arranged in realistic fashion by Mrs. Sherman Hoyt, of Pasadena, California. This enthusiastic lady had a somewhat similar exhibit in New York in 1928, and one this year at the Boston Centennial Show, where it won the highest awards. A considerable number of the plants, with natural stone and sand, are already in this country, the plants being in charge of Mr. Baggeson; other plants are following. The cost of carriage alone is, we believe, not less than £300. A special tent will be devoted to the exhibit at Chelsea, and powerful electric lamps will produce the necessary effect of brilliant light should the sun prove unkind. After the show the whole of the exhibit will be presented to the Royal Gardens, Kew.

Proposed Potato Pool in Scotland.—The National Farmers' Union of Scotland has taken a definite step towards the establishment of a trading Society for the disposal of Potato crops north of the Tweed. At a meeting held at Stirling, on April 25, the scheme was submitted by Mr. James Lennox, Redhills, Methven, and was favourably received. According to the provisions, members of the Society are to contract for a period of three years to sell all their crops through its agency, but unless 20,000 acres are guaranteed, the scheme will not be put into operation. It is hoped, however to get 50,000 acres, which represent fully a third of the land under Potatos in Scotland. The pool is to determine the time and sale of the crops, and it is proposed to market the maincrop varieties in two portions, *i.e.*, the first from October to January, and the second from February to May. Part payment is to be made in advance to growers, and the ultimate price would be the average obtained for particular varieties under a graded designation mark, ascertained over the whole season. Members on entering into contracts would be required to state their acreage, and undertake not to sell any produce outside of the pool without consent. The pool, on the other hand, is bound to relieve members of their whole crop, provided it does not exceed the acreage stated in their contracts. Each member would be required to subscribe shares in the Society of 40s. to 50s. per acre, estimated on the average of the past three years. As an illustration of the saving in transport costs, Mr. Lennox reckoned that they would get better railway terms for bulk traffic, and by chartering boats to carry seed sets to England they would save from £2 to £3 per acre on the present costs.

Cavendish Family and the Royal Horticultural Society.—The old connection of the family of Cavendish with the Royal Horticultural Society has been resumed by the appointment of the Marquess of Hartington to the Floral Committee. Lord Hartington, eldest son of the Duke of Devonshire and M.P. for West Derbyshire, is a keen gardener, and both in his own garden at Churchdale Hall, Derbyshire, and also at Hardwick Hall and Chatsworth he occupies a great deal of his time in the cultivation of shrubs and trees of all kinds. It was the sixth Duke of Devonshire who was President of the Society for twenty years[*] (1838-58). He employed Paxton (afterwards Sir Joseph, and one of the founders of *The Gardeners' Chronicle*) to build the immense glasshouse at Chatsworth which led to Paxton being employed to erect the building in which the Great Exhibition of 1851 was held in Hyde Park, and which was afterwards removed to Sydenham and reconstructed as the Crystal Palace. The same Duke of Devonshire first leased part of his estate at Chiswick (close to Turnham Green) to the Royal Horticultural Society, where the Society maintained a garden and held famous exhibitions for many years. Although these old gardens have long since disappeared, Chiswick House and its gardens still remain, and have been recently acquired from the Duke of Devonshire, for the use of the public, by the Brentford and Chiswick Urban District Council, whose Parks and Open Spaces Committee is under the Chairmanship of Mr. Charles H. Curtis, of *The Gardeners' Chronicle*, at one time Assistant Superintendent of the R.H.S. Gardens, Chiswick, under Mr. A. F. Barron.

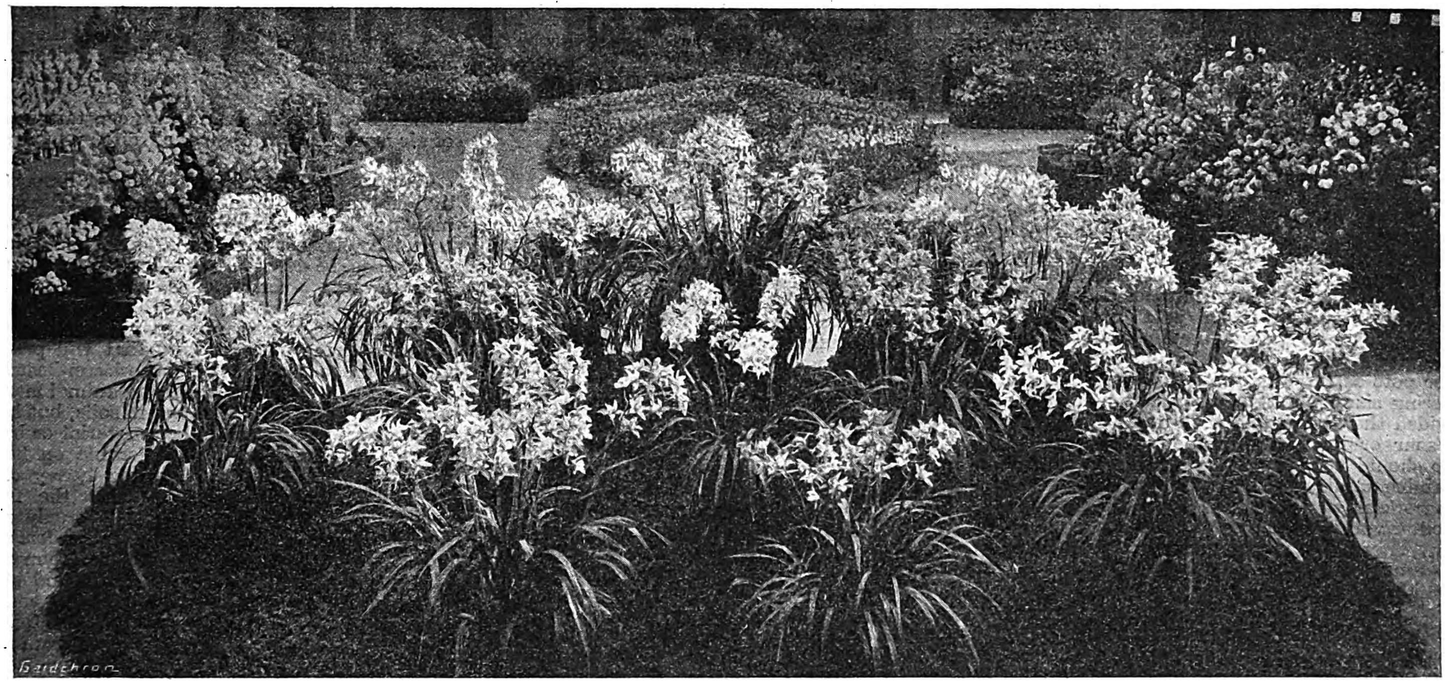

FIG. 170.—MESSRS. SANDERS' GOLD MEDAL EXHIBIT OF CYMBIDIUMS AT THE R.H.S. MEETING OF APRIL 23. (see p. 310.)

Fritillaria karadaghensis.—Messrs. R. Wallace and Co. write :—" A few weeks since you illustrated Fritillaria karadaghensis, from specimens we showed before the Royal Horticultural Society (see Fig. 107, p. 221). We would like to give credit where it is due. The discoverer of this new species was Mr. George Egger, who handed the specimens to Mr. Gilliat-Smith, who sent them on to Kew."

Chelsea Physic Garden.—Grave concern has been aroused among those responsible for the welfare of the old-established Chelsea Physic Garden by the proposal to erect a power station at Battersea, as it is considered that, if the proposal is put into effect, the difficulties already attending the growing of plants in this garden will be increased a hundredfold, owing to the sulphurous fumes which will be released into the atmosphere.

North-east Coast Exhibition.—As recently announced in *The Gardeners' Chronicle*, this exhibition will be opened by H.R.H. The Prince of Wales, on May 14. Although practically every branch of industry in the north-east and surrounding districts is well represented, other attractions have not been neglected; art, forestry, and horticulture have been extensively catered for. In the forestry section, not only are the flowering trees and shrubs represented, but a quantity of ornamental, evergreen and deciduous trees and shrubs have been skilfully planted for effect, and there is an extensive forestry nursery with trees from the seedling stage up to a size for general planting. The horticultural exhibits are now well forward, considering the unfavourable weather conditions experienced during the whole of this year. The rock garden arranged by Messrs. Lawrenson, the herbaceous borders by Messrs. Harkness and Sons and Messrs. Gibson and Co., and the display by Messrs. Kent and Brydon, are all good. There are beds and borders of Roses at every turn. Messrs. Finneys are responsible for the grass plots in the large square in front of the main pavilion. Messrs. Dobbie and Co. are occupying a considerable space with hardy and other attractive plants, while the Violas from Messrs. Harrison, a local grower of note, are already making a good display. The lake has been increased in size, and the sides are being planted with numerous flowering and ornamental shrubs broken here and there by rockeries; this will be of permanent interest to the local inhabitants for years to come. Two horticultural shows are to be held, the first on July 4, 5 and 6; the schedule for this show is now ready, and any particulars respecting the shows may be obtained from Miss A. M. Kelly, at the North-east Coast Exhibition, Newcastle-upon-Tyne, who is to be congratulated on the work she has carried out under the trying climatic conditions she has had to contend with.

Appointments for the Ensuing Week.—TUESDAY, MAY 14 : Jersey Gardeners' Society's meeting; Manchester and North of England Orchid Society's Exhibition.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Mr. Groom's Tulips.*—These are just now in perfection, and we can promise our readers that a sight of them will amply repay a visit. The best bed, 120 feet long, and containing not less than 2,000 flowers, is as fine as we have ever seen it. We observed the following favourite sorts in good condition, viz. :—Bybloemens : Victoria Regina, A. Addison, Captain Cook, Roi de Siam and Violet Alexander. Roses : Duchess of Sutherland, Countess of Wilton, Fleur de Marie, Michael Angelo, Claudiana and Catalani. Bizarres : Duke of Devonshire, Marshal Soult, Polyphemus, William the Fourth, Prince of the Netherlands, Catafalque, Dr. Horner and Prince of Wales. Among novelties were Miss E. Seymour, a good rose ; Themis, a Bybloemen ; and Mr. F. Perkins, Duke of Wellington and Marquess of Bristol, Bizarres. Of these and a few others we hope to give some account hereafter. The beds in the open ground are now at their best, and being spread over a large surface of ground they make a fine display. They have not been injured in the least by frost, and of failures there are scarcely any. A fine bed of Rose Eclatante, a deep red, double kind and scented, was especially remarkable ; this is a sort which should not be lost sight of by growers of early Tulips. *Gard. Chron.*, *May* 13, 1854.

Publications Received.—*Rose Growing*, edited by J. N. Hart ; crown 8vo., pp. 128, illustrated ; Messrs. Ward, Lock and Co., Ltd., Warwick House, Salisbury Square, E.C.4. Price 1s. net.—*Blonde or Brunette : the Art of Hair-dyeing*, by H. S. Redgrove and G. A. Foan ; pp. 182, well illustrated ; Messrs. William Heinemann (Medical Books), Ltd., 99, Great Russell Street, W.C.1. Price 7s. 6d. net.

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[*] See *The Gardeners' Chronicle* January 23, 1858.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Cymbidiums.—These have been making a grand display of bright and variously coloured flowers for many weeks. The lasting properties of the flowers are well-known, as they keep perfect for many weeks, both on the plant and when cut and placed in water; furthermore, these Orchids are of robust habit and easily grown, for they thrive under cool treatment, with a minimum temperature of about 50°, with ample ventilation, a moist and buoyant atmosphere, and light shading from strong sunshine. If they are grown with other cool-house Orchids, the best results are obtained if they are given a separate section so that the necessary light and air can be admitted to assist the ripening of the pseudo-bulbs and to ensure successful flower production. Well-rooted plants should not be allowed to remain dry at the roots for long periods, and they need copious supplies of water each time the soil appears dry, when the plants are developing and bearing their flower spikes. Red spider often attacks the leaves if dry conditions are maintained during hot weather. The syringe should be used on all favourable occasions to keep this pest in check, and should it gain a hold on the leaves, sponging with soapy water is the best remedy; strong solutions of insecticide permanently injure the foliage and should be avoided. The small scale insects which often infest the pseudo-bulbs increase rapidly and quickly spread to the foliage and retard growth if not removed so soon as detected. Cymbidiums resent much root disturbance. The small plants, such as seedlings and propagated plants, should be potted on into slightly larger pots as they require it, but specimens of flowering size do not require annual repotting, provided the drainage is good and the compost not sour or impoverished; any repotting of these should be done with a view to the plant remaining undisturbed for two or more years. This work may be done safely after the flowering period, when the plants are commencing to grow again. Remove the old soil and the decayed roots and useless back pseudo-bulbs; the latter, if sound, may be potted up if an increase of stock is desired. A good, substantial compost should be used, consisting of three-parts good loam, one part finely cut fibre, and plenty of finely crushed crocks; if this is used in a dry condition it can be worked easily among the fleshy roots without injuring them, for the roots are easily damaged when a potting stick is used. A little extra shading should be given to newly-potted plants, but very little water will be required at the roots until they are well established in the new soil, when increased supplies may be given.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Planting Forced Strawberries.—When these plants have not been unduly weakened by hard forcing, they are excellent for planting in a well-prepared piece of ground in the fruit quarters. They should, of course, be hardened off gradually by giving them the protection of a cold frame and a good supply of water. Should the plants show signs of red spider or mildew, a few of the older leaves may be removed and destroyed, and the remainder given a thorough dusting with flowers of sulphur. When planting, break the ball of soil about the roots, and remove any crocks and a portion of the caked surface soil. If this is done, the roots will take quickly to the new soil. Plant them deeply and firmly and give one or two good waterings to settle them in. Under favourable conditions they will produce a crop of fruits in early autumn—just that extra dish of dessert fruits which is appreciated at that time.

Black Cherry Aphis (*Myzus cerasi*).—Even when the winter spraying for the destruction of the eggs of this aphis has been well carried out, there is always a small proportion hidden in cracks and other sheltered nooks, which escapes. Under favourable conditions these eggs hatch out, and the lice multiply with such rapidity as to cover completely and destroy the young growing shoots. These insects, all of which are females, have the power of producing living young, and continue to do so for many generations during the summer months. Winged forms appear in July, when they leave the Cherry for some other host plant, returning in autumn, when the male and the egg-laying females appear. The progeny from the over-wintered eggs hatched in spring, invariably, like most other aphidae, attack the under surfaces of the leaves, and by sucking the sap from the cells cause the leaves to curl backwards, and so form a protecting enclosure. It is of the utmost importance, therefore, that the trees should be examined every few days for the appearance of this pest, or that we anticipate the attack by spraying with some good soapy mixture. Spraying should be carried out before the leaves begin to curl. The most effective spray to apply at this time is one of soft soap and nicotine, 8 lbs. to 10 lbs. of the former, and five ounces of the latter, to one hundred gallons of water. This spray should be applied with some force, and particularly to the under surface of the leaves. Nicotine is now comparatively cheap—16s. per pint of twenty fluid ounces—and should be employed largely against all forms of plant lice.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Pruning Flowering Shrubs.—Flowering shrubs are, in the majority of cases, a few weeks later in blossoming compared with former years. Those flowering on the previous year's wood should be attended to as they pass out of bloom. The well-known Forsythias are good examples of the type requiring this treatment. By pruning these annually, a plentiful supply of vigorous, young growths is encouraged which will flower freely the following spring, and this treatment also tends to keep the plants shapely. F. suspensa is probably the most popular and is valuable for training on walls. At Wisley it has been allowed to ramble through the branches of a Pine tree, and the effect is very attractive when its golden bells are produced freely, with the dark foliage of the Pine as a foil. The best of the Forsythias for planting in beds or in the shrubbery is F. intermedia var. spectabilis, which is of erect and dense habit and does not require hard pruning; its flowers are of pleasing, deep rich yellow. F. i. var. densiflora is also worth including in a collection. To the observant, it is not difficult to recognise those shrubs that require treatment similar to that afforded Forsythias to get the best results. They include the sweetly-scented Chimonanthus fragrans which, if grown on a wall, should be pruned in February or March; and the homely Jasminum nudiflorum, so welcome on cottage walls in early spring, which should be encouraged to make long growths by pruning when flowering has finished. Likewise, Clematises of the C. montana group are most attractive if the necessary attention can be bestowed on them as they pass out of bloom. Much dead wood will have to be removed where large collections of shrubs are grown, owing to the past severe weather, but it is better to defer this work until milder and more genial conditions prevail, when the extent of the damage done may be fully ascertained.

Herbaceous Plants.—The stronger-growing herbaceous plants are now far enough advanced to have the weaker growths removed. This is a very necessary operation if good spikes of flowers are desired from such subjects as Delphiniums, Asters and Phloxes. Rapid growth will be made by many of these plants from now onwards, and close attention must be given to staking. For the more bushy sorts nothing is so satisfactory as Hazel twigs. These, if of the right size, and put in and around the plants at an early stage, so that the young growths grow through them, give the whole an extremely natural effect. For such subjects as Delphiniums, Liliums, and the taller-growing Asters, Bamboo or Hazel stakes are most suitable.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield Surrey.

Forcing Cherries.—Houses in which the earliest varieties of Cherries are approaching the ripening stage must be kept somewhat drier on dull or wet days, and ventilated as freely as may be consistent with the swelling of later fruits when the weather is fine. If growing in pots, very careful watering is necessary to ensure that they do not get too dry or too wet at the roots. Trees in borders, if well-watered and mulched shortly before the fruits change colour, should seldom require any more moisture at the roots until after the fruits are gathered, neither should they be syringed. Later varieties will require another application of water at the roots before they are mulched, and should be syringed on fine mornings only. Important operations are thorough fumigation on calm evenings when the foliage is quite dry and when the earliest fruits show signs of ripening, or syringing with quassia water, always provided the trees are thoroughly washed the next morning and the house well ventilated, with gentle fire-heat to prevent condensation of moisture. Nets should be placed over the ventilator openings to keep out birds, as a constant supply of air is imperative when the fruits are ripening.

Mulching.—This operation is as important in fruit houses as in the open garden. Mulching may not be absolutely necessary immediately, especially upon cold soils, and may, with advantage, be deferred until the sun has made the soil warmer. Much depends on the growth and condition of the roots as to whether stimulants are required; rich manure may not be needed, yet a covering of some kind that will prevent evaporation of moisture and absorb sun-heat may be of the greatest service. Heavy animal manure may be beneficial on light, warm soils, but horse manure, spent Mushroom-bed material or burnt earth and refuse, will be preferable on heavy soils. Established trees carrying heavy crops require stimulants from the time the fruits commence swelling until they are nearly ripe, hence the advantage of covering the borders with some kind of short manure. Fresh stable manure is a very suitable mulch for Vines and stone fruits, as it charges the house with ammonia which acts as a beneficial stimulant to the foliage. Rich organic manure often does more harm than good by making the borders sour and cold, and by encouraging gross, late growth which, in unfavourable seasons, never ripens.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Campanula pyramidalis. — The elegant Chimney Campanula is an excellent plant for furnishing the cool greenhouse and for other decorative purposes. By introducing a few plants into gentle warmth now, and allowing others to remain in the cold frame, plants may be had in bloom over an extended season. When growth is active the roots should be liberally supplied with liquid manure, but no attempt should be made to hasten the plants with fire-heat. Seedlings raised as advised in a previous calendar are now ready for pricking off into boxes. They should be grown under glass until they are well established, and when suitably hardened they may be planted out-of-doors in a well-prepared border and allowed to remain there until the autumn, when they should be lifted and placed in their flowering pots.

Cuttings.—Cuttings of such stove and greenhouse subjects as Dracaenas, Codiaeums (Crotons), Bouvardias and Saintpaulia, are now ready for transferring singly into small pots, care being taken not to break the young roots, which are very brittle. The compost for this potting will depend on the subject under treatment.

Crotons and other stove plants need good fibrous loam and peat, while most of the greenhouse subjects require a mixture of open loam, leaf-mould and old. Mushroom-bed manure, with a liberal quantity of broken charcoal and sand added in both cases. After potting, place the young plants in a suitable temperature to ensure good growth; if a mild hot-bed is available, plunge the young plants of Crotons and Dracaenas in it, and shade them from bright sunshine. Spray them lightly several times each day, but not to such an extent as to cause the top soil to become soured.

Euphorbia fulgens (jacquiniaeflora).—Stock plants of this useful Euphorbia may now be afforded a little more heat to encourage the production of young shoots, which should be secured when about three inches long, as cuttings. These are best taken with a heel of the old wood and, immediately they are severed with a sharp knife from the parent plants, should be placed upright in powdered charcoal to check bleeding. The cuttings should, if possible, be taken in the early morning, before the sun gains too much power, otherwise they are liable to flag before they can be inserted in a sandy compost and placed in the propagating frame. Place three cuttings in a small receptacle, and when rooted, the plants may then be grown on intact or potted up singly. This Euphorbia does best in a stove temperature until the plants are well-established in their flowering pots, when they may be afforded slightly cooler conditions. The roots need careful watering at all times, and they should never be allowed to become excessively dry. Euphorbia pulcherrima requires much the same treatment as advised for the above.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Vacant Ground.—As the winter crops are cleared, all rubbish should be collected from the ground, which should be manured and dug in readiness for other crops.

Beet.—Maincrop sowings may now be made of both Turnip- and long-rooted varieties of Beet, although the former variety may be sown so late as July to provide tender roots in the late autumn, when they are very much appreciated for salad purposes.

Mushrooms.—If plenty of rough material is available, together with a fair quantity of fresh horse manure, another Mushroom bed may be made in the open, in a shady, cool corner. So soon as the bed is ready, it may be spawned, covered with three inches of soil, well beaten down, and then covered over with a layer of hay, which will help to keep it moist. Damp the bed at regular intervals with tepid water.

Peas.—Make further sowings for succession of such tall varieties as Telephone, Telegraph, Edwin Beckett and The V.C., which are good, free-cropping sorts. A mulching between the rows will be beneficial to Pea plants, especially in dry weather, and if any doubt exists as to whether the plants are dry at the roots or not, plenty of water should be given. If Peas are allowed to become very dry at the roots, mildew will quickly set in, and the crop will be spoiled.

Chicory.—A sowing may also be made of Chicory. When the seedlings are large enough, drastic thinning should be done, allowing one foot between each plant, or even more, if good crowns are aimed at.

Gourds.—These may be sown now, placing the seeds singly in three-inch pots; with the smaller varieties three seeds may be sown in a pot. The fruits of the ornamental varieties will, with careful treatment, remain ornamental for many months.

Celery.—The earliest Celery plants for exhibition work will now be ready for planting out in the trenches. Single lines are best for procuring good exhibition sticks. Never allow the plants to suffer through lack of water at the roots; plenty of well decayed manure should have been placed at the bottom of the trench. Should the ground be dry, give the soil a good soaking with water a few hours before planting, and also give the plants a thorough soaking with clear water before transferring them to the trenches.

Runner Beans.—Seeds of these may, with safety, be sown out-of-doors now if the ground has been well prepared beforehand. Dwarf Beans may also be sown.

Turnips.—Further sowings may be made of such Turnips as Dobbie's Model or Sutton's Snowball. Swedes may also be sown, the roots of these keeping well and proving very useful during the winter months.

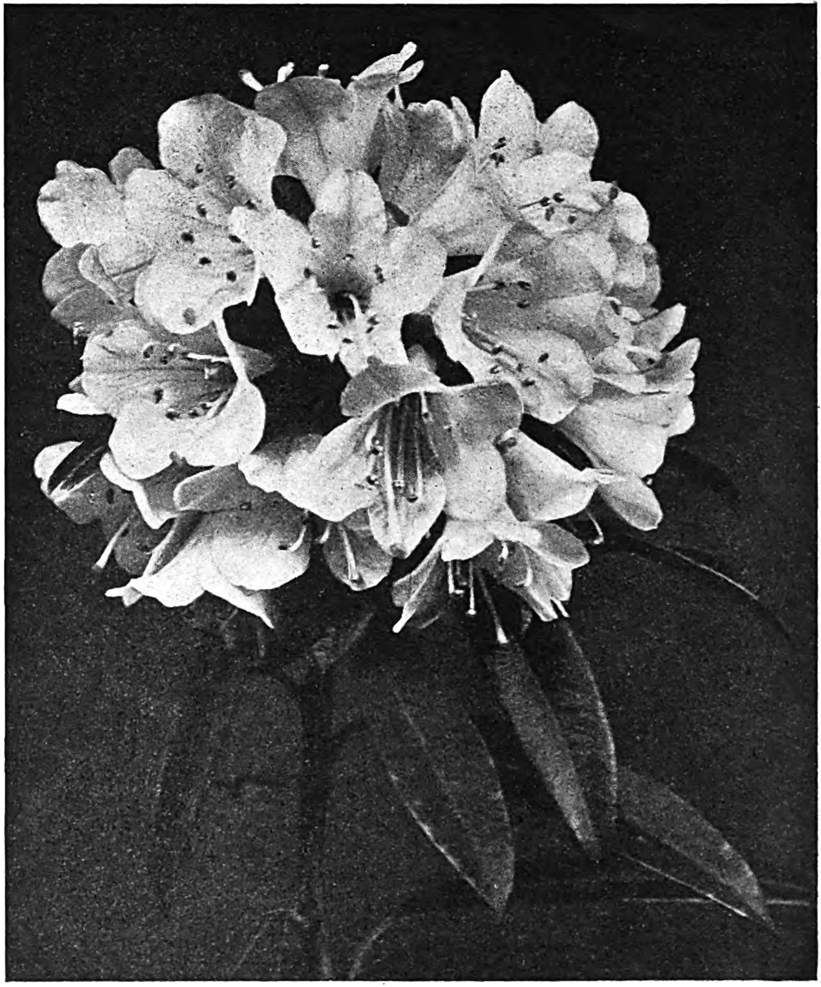

FIG. 171.—RHODODENDRON TEPHROPEPLUM.

R.H.S. Award of Merit at the Rhododendron Show on April 29. Flowers pink. Shown by Lady Aberconway and the Hon. H. D. McLaren (gr. Mr. F. C. Puddle), Bodnant.

(see p. 337.)

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemont, Monkton, Ayrshire.

Vegetables.—Plant out Cauliflowers, Cabbages, Brussels Sprouts and Lettuces as they attain suitable size, placing them in deep drills, which will afford protection against wind. The distance apart for planting will be regulated by the habit of each variety, but as a general rule two feet by two feet is suitable; tall-growing Brussels Sprouts require three feet by two-and-a-half feet, while small-growing Cabbages and Cauliflowers require less than the average distance. Brassicas sown out-of-doors in March should now be ready for pricking out, which treatment results in much better plants than if they are left to struggle in the seed-beds. Make frequent sowings of early Turnips and Radishes, as frosts are liable to, and often do, render earlier sowings useless. Thin, hoe between, and stake Peas as necessary, and make successional sowings. Use the Dutch hoe or apply the cultivator among all growing crops at every opportunity, especially where the ground dries after heavy rain.

Bedding Plants.—Get these all hardened off and ready for planting; remove weeds which appear and, in the case of later plants, stir the surface soil frequently. If these plants are growing too strongly a check may be administered with advantage by running a large knife-blade lengthwise and crosswise through the soil between the plants to sever the roots; this will prevent serious root disturbance at planting time.

Chrysanthemums.—September- and October-flowering Chrysanthemums which were planted out recently should now be stopped by pinching out the growing points with the finger and thumb in cases where the natural break has not taken place. As growth recommences, select four of the best breaks and remove the others Promote free and sturdy growth by watering, if necessary, and also by surface cultivation.

Eremuri and Fritillaria imperialis.—These are now starting into growth and should be shaded from the sunshine after night frosts.

Wall Fruit Trees.—Continue to disbud Peach trees and thin the fruits slightly where setting has been free. Afford water at the roots in dry weather and give a dressing of a good fertiliser. If hot, dry weather sets in a good mulch of manure or even short grass will prove beneficial. As Plums, Cherries, Apples and Pears are now in active growth, go over them occasionally, removing unwanted growths near the foot of the tree, so as to assist the fruiting wood. All breast shoots may be stopped at the fifth leaf, especially on cordons. Should mildew appear, spray with lime-sulphur or Medela wash.

FLOWER GARDEN.

MISCANTHUS JAPONICUS.

It is not generally realised how highly ornamental this free-growing, and yet not rampant, perennial grass may be in a garden, for its adaptability and charm are seldom employed to the fullest advantage.

In the first place, it is not very particular as to the soil it is planted in, for it flourishes equally as well either in loam or peat, provided it has been worked deeply and is not shallow. Next, it does not object to a hot, fairly dry position, although it is, perhaps, seen absolutely at its best when enjoying a cool, moist root run; and it flourishes alike in full sun or partial shade. So, it will be seen, M. japonicus is a very adaptable plant, and the above remarks apply also to two highly ornamental, variegated varieties of M. sinensis.

And as to the uses to which it may be put, they are many. It makes a handsome specimen plant for lawns, etc., or it may be grown in large tubs for similar decorative effect. If specimens of it, and of the other mentioned, are dotted about the herbaceous border, the appearance of the latter will be enhanced considerably. It may be grown in groups or as isolated specimens in the open woodland garden, and it is never so attractive as when planted on the margin of a pond or lake.

For M. japonicus is of handsome and stately appearance, and forms a mass, or close sheaf, of narrow, linear leaves, deep green and light and graceful, from three to four feet high, and above these are borne, in the later part of summer, feathery panicles of brownish-purple flowers, quite twelve inches in length, with gracefully drooping branches. As stated previously, there are two grand variegated forms of M. sinensia namely M. s. var. variegata and M. s. var. zebrina. The foliage of the former is striped longitudinally with green and white, so that a well-grown specimen of it is very decorative, while the variety zebrina, as its name suggests, has cross bands of yellow, which contrast brightly with the normal rich green of the foliage. The genus Miscanthus is often referred to Eulalia. *W.*

ALPINE GARDEN.

SAXIFRAGA IRVINGII.

This Kabschia Saxifrage appeals to me for two reasons in particular, although it has other claims. The first is that it is of great beauty, and the second is that it bears the name of one of our best alpinists, who has given much study to the genus Saxifraga and has enlightened us on a good many points of culture and nomenclature. Apropos of this quesiton of nomenclature, I observe that one good authority, at least, states that the parentage of this hybrid is "reputedly between Burseriana and Frederici-Augusti," but Mr. Irving himself tells us that it is a cross between S. Burseriana var. macrantha and S. thessalica.

We have not many hybrids of the Kabschia and Engleri sections with red or pinkish flowers, but S. Irvingii was one of the first, and it has been long enough in many gardens to have proved its worth. It is of very dwarf habit, being only about an inch in height, and has very dense, small cushions of bluish-grey foliage and lovely pink flowers. In the moraine it is quite at home, and it does well in the rock garden. The ordinary treatment afforded the Kabschia Saxifrages will suit it well. It flowers freely here, and, although I grow it in full sun, growers in the sunnier parts of the south may give it slight shade from the strongest sun. It was first sent out as S. Burseriana var. rosea.

ARENARIA BALEARICA.

In the interesting note on the above, on p. 292, your contributor *L. B. C.* states that it "appreciates sunlight." With many, however, A. balearica does not thrive well in places where it receives the direct rays of the sun for any length of time during the day, and always flourishes best in shady, moist positions on and about stones. I have had it on both sides of retaining walls and other arrangements, where on one side the Arenaria received sun for the greater part of the day, while on the other side it only had sun for a short time in the summer evenings. The contrast was remarkable, as the plants on the sunny side were poor and never spread with any degree of rapidity, while those on the shady side throve freely. All were on sandstone. The same may be observed in my present garden, where A. balearica is growing on double stone sandstone walls planted with alpines and flanking two flights of steps. I have seen it flourishing on and about the stones of an outdoor Fernery, and I know a small rock garden where, in shade, it seems to find granite stones quite congenial. The point that it should be planted with discretion so as to prevent it from choking other plants is justly emphasised by your correspondent; weak as A. balearica appears, it is a serious danger to choice plants near it. *S. Arnott.*

RAOULIA AUSTRALIS.

Of very low and close habit, this daintly little Raoulia, from Australia and New Zealand, is valuable for clothing rock surfaces, or for planting in positions practically barren of soil and fully exposed to the sun. For it requires very little soil to sustain it, and when once established will form a wide mat of tiny rosettes of frosted, silvery foliage, all packed closely together and glittering in the summer sun, while even in winter, although naturally not so lustrous, it is still quite effective, and is seemingly oblivious to the vagaries and inclemencies of our climate.

Unfortunately, R. australis has a habit of flowering just when it has attained suitable dimensions to be really effective, and as these small "Everlasting" flowers are devoid of beauty, they impart to the silvery mat a blotched appearance, and leave it patchy and bare in the parts where the flowers were most plentiful, with the result that the lovely carpet is temporarily spoiled, and top-dressing with finely, sifted, light compost has to be applied to encourage it to fill up these bare patches and regain its former beautiful self—a close, ground-hugging mat, rooting as it spreads, of sparkling silver.

If fresh plants are required, division may be resorted to, small portions being pulled from the parent and planted or potted separately, and these will soon establish themselves. *Kent.*

TREES AND SHRUBS.

CYTISUS HIRSUTUS.

This native of southern Europe has been in cultivation for nearly two centuries, but it is not often seen in gardens. It is, however, a shrub well worthy of more extensive use, for its flowers are large, it is always the first of the taller Brooms to give colour here, and it has a certain elegance of character of its own. Being a very variable species, C. hirsutus presents several more or less distinct forms. Mr. W. J. Bean in *Trees and Shrubs Hardy in the British Isles*, describes the type as a somewhat decumbent, deciduous shrub of one foot to two feet in height. In sheltered gardens it will grow taller, but the habit is generally open and the branches few, slender and whippy. The trifoliate leaves are unusually large for a Broom, the oval leaflets being nearly an inch long and half as broad. The undersides of these, as well as the young wood and calyx, are downy. Borne in axillary clusters of two, three or four on the older growths, the first flowers open about mid-April. These are broad and fully an inch in length and of a good, warm yellow, which is intensified by a flare of orange (turning to brown) on the standard. Seeds afford a ready means of increase. The plant is absolutely hardy and the blooms remarkably resistant to spring frosts.

An even more striking shrub is a taller development known as C. h. var. hirsutissimus. This will reach the stature of four or five feet. It is almost erect in habit, and is more downy than the type. Such features are also common to C. ratisbonensis, the only species which is liable to be confused with C. hirsutus. But this tall and stately Broom may, as Mr. Bean points out, be distinguished by the hairs on its twigs, leaves, calyces and seed pods being adpressed. Most of these early-flowering Brooms, and there are others of the class, are sufficiently good as garden shrubs for more general culture. But the average gardener who is not concerned with minute differences will doubtless find two or three of them sufficient. *J.*

PRUNUS PENDULA.

Few trees are more attractive in March and early April than Prunus pendula, commonly called the Rosebud Cherry, a native of Japan, where it grows from fifty to sixty feet high, but is usually under twenty-five feet high in this country. It is a deciduous tree and has a very ornamental appearance with its drooping branches, and is therefore excellent for top-working on standard stocks. It was introduced into this country by Sargent, who described it as a very effective tree with wide, spreading, fountain-like head of branches, and quite common in old temple gardens of Japan.

The leaves of Prunus pendula are from two-and-a-half to three-and-a-half inches long, and more than one-third as wide, lanceolate and long-pointed, sharply, and often doubly-toothed, and glandular near the base, with a stalk three to three-and-a-half inches in length. The flowers are from half- to three-quarters-of-an-inch across, and are pale rose in colour, produced in short-stalked clusters of two to seven, each flower being on a downy stalk half-an-inch or more long, and possessing a hairy calyx. The fruits are small and globose, and are black and shiny when ripe.

Prunus subhirtella, an upright-growing plant of charming appearance, and Prunus pendula are thought to be forms of one species, but Prunus pendula cannot be merely a pendulous sport, as it comes true from seeds. Whatever its origin, it is certainly worth a place in any garden, and the fine specimen in the Botanic Garden, Cambridge, is one of the most attractive trees at the present time. *George H. Preston, Botanic Garden, Cambridge.*

BOG AND WATER GARDEN.

SYMPLOCARPUS FOETIDUS.

Known throughout the eastern United States as the Skunk Cabbage, Symplocarpus fœtidus is the only representative of the genus. It is a most curious plant—a member of the Natural Order Araceae—and derives its vernacular designation from the strong, disagreeable odour which all parts of the plant emit when bruised.

S. foetidus occurs plentifully in swampy locations. The inflorescences appear very early in the year, and occasionally before January 1. The spathes are about six inches in length and are borne close to the ground, usually several in a clump, while the apex is curiously curled in a hood-like manner. Of an apple-green hue, the exterior of the spathe is beautifully mottled with purple and yellowish-green, while the interior is predominently purple.

Within the spathe is the globose or oblong spadix, also purple in colour and entirely covered with flowers spaced about one-third of-an-inch apart, and with their ovaries embedded in the spadix. The flowers are bi-sexual, having a perianth consisting of four hooded sepals, four stamens having two-celled anthers, and a four-sided, pyramidal style. Although the spathes appear so early, the pollen is not usually ripe until late February or March, and in the present year I observed this condition in mid-April. The spathes remain in good condition for a long period, usually well into May, after which they decay, and the large, one-sided heads of berries ripen in autumn.

When, in April, the leaves of the Skunk Cabbage first appear above ground, they are of an attractive light green colour, with paler veins and they somewhat resemble those of the Spinach Beet. They grow rapidly and soon attain a height of two or three feet and are one foot in width; they are ovate, with a cordate base, and are quite glabrous, with the veins strongly marked; the stout petioles are deeply channelled. *T. H. Everett, New York*

ANISOTOME (LIOUSTICUM) LATIFOLIA, HOOK.

THE Auckland and Campbell Islands, which lie far to the south of New Zealand, have a most interesting flora which has scarcely been touched from a horticultural point of view. The plants found on these islands are mostly endemic, although a few are also found in New Zealand and other areas which have sub-antarctic elements in their flora. It is a strange fact that the flora of these islands, which are very cold and windswept, is more colourful than that of New Zealand; for example, all the Gentians found in the main islands of New Zealand are pure white, while those cold sub-antarctic islands are capable of producing a fine purple species.

Anisotome latifolia was first described by Hooker in the *Flora Antarctica* when he founded the genus Anisotome to include the two species, A. latifolia and A. antipoda, which are both found in the same locality. Some twenty years later, he transferred the genus to Ligusticum—*Handbook of the New Zealand Flora*—and there it remained until 1909, when Cheeseman suggested that Ligusticum should be limited to species found only in the northern Hemisphere, and that Anisotome be revived for the reception of species from New Zealand and the outlying islands. This suggestion has since been adopted and that is how the matter stands to-day.

A. latifolia is stated to be fairly abundant in moist places from sea shore to mountain top throughout the groups of islands. It is unquestionably one of the most handsome of the Umbelliferae. In its native habitat it is stated to attain from six to eight feet in height, but in the Dunedin Botanic Garden specimens rarely reach more than three feet in height, despite the fact that they seem to be thoroughly happy (Fig. 172).

A. latifolia is not a common plant in gardens, and because it is a typical Umbellifer, producing a long, tapering tap-root, it rather resents root disturbance. It is a noble plant when growing in the open border. The foliage is of a deep, shining green, and on being bruised, the whole plant exhales a strongly aromatic odour. The leaves, which are some thirty inches long, are thick, coriaceous and bipinnate, with conspicuous reticulate veins.

The dioceous, compound umbels are borne on a stout, erect stem, which is approximately of the thickness of the wrist; at the base it is furnished with broad, concave bracts, which have small, foliaceous tips. The long, compound umbels are quite showy when bearing their burden of numerous, small, purple or rose-coloured flowers.

The closely allied A. antipoda is almost as fine a plant as the preceding, and may be readily identified by its more finely divided leaves with their numerous linear segments. The flowers are stated to be red, but, so far, I have not seen any specimens bearing flowers.

These two plants are semi-evergreen, herbaceous perennials, and are most effective if planted by the edge of the bog garden. They will flourish in the open border provided plenty of moisture is present. They do not seem difficult to please so far as soil is concerned, provided there is plenty of room in which to develop their long, tapering tap-roots. *A. W. Anderson, Botanic Garden, Dunedin, New Zealand.*

HARDY FLOWER BORDER.

HARDY CENTAUREAS.

EXTENSIVE as the genus Centaurea is, there are yet comparatively few members that are worthy of garden cultivation, but among those claiming this distinction are several exceedingly useful and, in some instances, extremely beautiful plants. For practical purposes, these may be divided into three sections. First, there are the half-hardy, silvery-foliaged Centaureas, invaluable for planting in association with flowering plants in summer bedding schemes; next, there are the annual species, which embrace such popular subjects as C. Cyanus (the Blue Cornflower), and C. moschata (Sweet Sultan), both long residents in our gardens, and quite invaluable. And lastly, there are the hardy perennial species, worthy claimants for positions in the flower garden, preferably in the herbaceous border, and it is the purpose of my notes to bring these to the notice of readers.

Most gardeners and plant lovers are familiar with Centaurea montana, the perennial Cornflower or Mountain Bluet, for it has been cultivated in gardens for many years—it was introduced in 1596—and is often to be met with in old-world cottage gardens. It is a very accommodating plant, thriving in most positions and lasting many years, and may be employed effectively in the herbaceous border, the wild garden, or on the margin of the shrub border, in all of which positions it will form a leafy mass, some eighteen inches or so high and more across, and will produce, during early summer, a profusion of rich blue "Cornflowers," with ragged, deeply-cut florets, which may be cut and used for table decoration. C. montana was one of the first plants figured in the *Botanical Magazine* (t. 77), and it may bo had in several colour forms. The variety alba grandiflora has large, pure white flower heads, and is well worth planting, while varieties rosea and rubra, the former pale, and the latter deep rose, are also desirable. C. m. var. sulphurea (var. citrina of some authorities, including Bailey in *Standard Cyclopedia of Horticulture*) is deserving of a place, for its ray florets are pale sulphur-yellow.

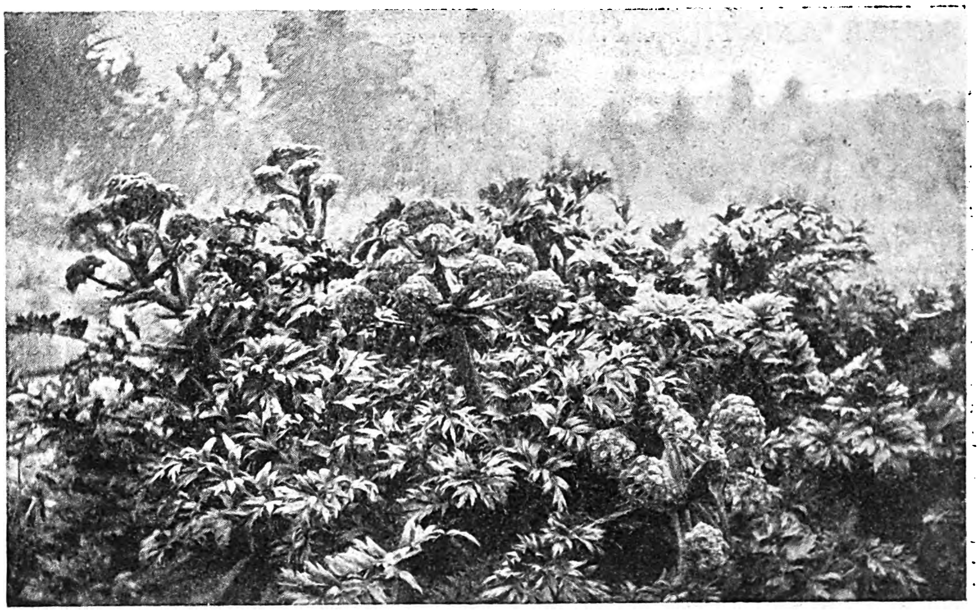

FIG. 172.—ANISOTOME (LIGUSTICUM) LATIFOLIA.

One of the most beautiful of the hardy herbaceous Centaureas is C. dealbata, from the Caucasus. This should be in every herbaceous border, preferably near the front, for it seldom grows to a height of more than two feet, and forms a bushy plant of attractive, pinnate foliage, the slight silveriness of the undersides of the leaves adding considerably to their charm. And then, during summer, the large flower heads, composed of rich rose-pink ray-florets and slightly paler disk-florets, are produced singly, but freely, on semi-erect, leafy stems, and seem to nestle against the dark green, silver-lit foliage to produce a very beautiful effect. C. dealbata is a good perennial, flourishing in deep, well prepared soil; it is quite hardy, having come through last winter unscathed, and may be increased by careful division. With me, this Centaurea does not set seeds, nor, for that matter, do the other species, although I do not know whether this applies to them in other parts of the country—possibly not—as there is nothing in their habit or general appearance to suggest inability in this respect.

More attractive in foliage than blossom is C. babylonica, but it is well worth growing for the former, for its leaves are very handsome, being large and clothed with bright, silvery-white, cottony down. It may be grown in the herbaceous border, or afforded a bed to itself, in a sunny position, and, to be truly effective, it should be grown in deep, light loam. If it is allowed to flower it will send up a stout, erect stem to a height of close on ten feet, leafy below, and furnished on the upper portion from July onwards with almost sessile, yellow flower heads, each produced in the axil of a narrow, leaf-like bract. C. babylonica would not appear to be long lived, but seeds, and plants, are often offered, and so stocks of it may be obtained. It is a native of Asia Minor, and has been in cultivation many years.

Another handsome species, and a strong-growing herbaceous perennial, is C. glastifolia, from central Europe, and described in *Bot. Mag.*, t. 62, even before the better-known C. montana. It is of striking appearance, for it produces stout, branching, winged stalks four feet or so high, and these bear large, solitary flower heads of rich golden-yellow, which are very effective when cut and used for room decoration. Provided it receives generous treatment, C. glastifolia well repays inclusion.

One of the most popular of this group, and not uncommon, is C. macrocephala, the Great Golden Knapweed, a native of Armenia, and figured in the *Bot. Mag.*, t. 1248. It is strong and vigorous-growing, producing simple, erect, leafy and hollow stems to a height of about four feet, for which reason it should be planted well back in the herbaceous border, in deep, rich soil. And these growths, during July and August, are crowned with huge, solitary flower heads, quite the size of hen's eggs, and composed of closely-packed florets of bright golden-yellow; as if to provide the extra strength needed to carry these giant inflorescences, the flower stems are swollen just beneath them.

Although rather coarse-growing and amply foliaged, these traits should not deter its inclusion in the herbaceous border of large dimensions, albeit it may hardly be suitable for a place in small collections of really choice plants.

Lastly, there is the handsome C. ruthenica, from the Orient and central Europe, a species with attractive, pinnate foliage. It is free-flowering, producing a succession of blooms from July to September. These are borne on erect, branching stems, rising above a mass of leafage to a height of three feet, the large, loose flower heads consisting of pale, strawy-yellow florets. Like the other species, C. ruthenica is a good perennial and repays generous treatment—deep, cool, well enriched soil, with, perhaps, slight shade from the hottest sun, although this latter is not essential. *M. W.*

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CHILE AND THE ANDES.*

No. XI.

WE had been promised an introduction to the "King of Coquimbo," but although this introduction did not materialise, we nevertheless called upon him the day after our arrival, and received a most cordial welcome. He at once suggested that he and his family, and we with them, should migrate forthwith to his country seat, a charming farm at the foot of a range of mountains five or six miles out of town. Never was such a delightful, impetuous host. He lunched us and then motored us all out, two car loads of us, for a picnic tea at the farm. It was a typical Chilian farm (Fig. 173), a big, square, spacious house, two-storied, with lofty rooms, and a wide balcony running all round it. In front was a courtyard with Palms and flower beds, Violets, Wistarias, Roses, Freesias, and a pool with fish. Here we were received by an Irish wolfhound, a gigantic creature of surpassing dignity, and with a voice like the deep rumbling of an earthquake. After tea, we walked out in the direction of the mountains, which were of no great height, and were only a mile or so away, and at once we realised that Leucocoryne had lured us to a first-class paradise. The ground between the farm and the mountains was stony, sandy loam, undulating, and carrying a thin scrub of low bushes, Oxalis gigantea, Solanum pinnatum, and a delightful Heliotrope (C. E. 36, possibly Heliotropium pycnophyllum), with the foliage and habit of an erect Rosemary, three feet high, and with spreading heads of very fragrant, white blossoms. Upon this land, within two or three hundred yards of the farm, we came upon Leucocoryne ixioides (odorata), "Glory of the Sun." Never have I seen such an astounding flower picture. It grew in misty sweeps by the mile and by the million, springing leafless from bare, barren ground, the wiry, graceful stems carrying umbels of from three to five, six, or even seven, blue flowers, white-centred and shaped like Chionodoxa, but much larger. They varied a good deal, some paler, some darker, some one-and-a-half inch and others a full two inches across, and they had a powerful, delicious, Almond fragrance, which comes near to, but is not quite, the scent of Heliotrope. For an hour or so we just wandered about among these fields of Leucocoryne, too astonished and enchanted to take a single blossom or dig a single bulb. Ours was the colossal fortune to have happened on this incomparable plant, and to have been invited to come and stay as long as we would at the farm, convenient at its very door. For that blissful afternoon we luxuriously basked in a delicious mixture of Chilian spring sunshine, the thrill of a great find, a scene of extraordinary beauty, and a feeling that this find alone made our two hundred mile journey north more than well worth while. It justified the whole journey to Chile.

On this same tract of country grew another blue-flowered plant, more brilliant than Leucocoryne, if not more beautiful, a Convolvulaceous plant, Nolana littoralis (C.E.4). It had a little, Carrot-like, perennial root, from which radiated trailing stems, thickly studded with big, cup-shaped blossoms, two or three inches across, of a brilliant, clear Nemophila-blue, white-centred, and with yellow at the heart. Each plant was a foot or eighteen inches across, and they grew in vast colonies of many thousands at a time. The plant has rather the appearance of Convolvulus minor, absolutely prostrate, but more refined and brilliant and beautiful. I felt sure, however, that somehow it would never make so good a garden plant as Leucocoryne. Almost certainly it would not prove hardy, and its prostrate habit was against it as a greenhouse plant. As a half-hardy annual, however, it may turn out a treasure.

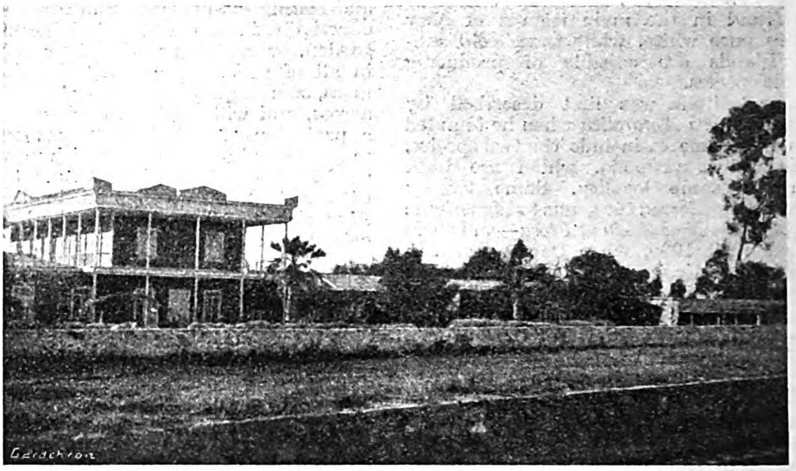

FIG. 173.—THE "KING'S" FARM HOUSE, COQUIMBO.

Leucocoryne, on the other hand, would, I felt, make a first-rate greenhouse plant, an opinion which it has since done much to confirm. And here I will go ahead of my narrative and tell of the doings of Leucocoryne since I sent it home and how it has fared in captivity. The bulb is about the size of a Snowdrop, and is very difficult to get up out of its hard, sandy, stony soil. But I secured a great store of them in the end, and ripened them off on the sunny balcony of the farm, and then I packed them, very, very carefully, in two great crates, with special precautions for ventilation and against rats, and I shipped them off to England, with special instructions as to storage. Then weeks and months after they should have arrived, came news of their non-arrival, awful waits, maddening silences, and frantic cablings, and finally a cable from home "Bulbs arrived in sound condition." Having found the plant flowering in September, I thought it would probably flower here at about the same time. Not a bit of it. I planted mine out in a bed in an airy greenhouse about mid-summer, and nothing happened. I gave them gentle heat, a temperature round about 50°, and at last, in November, they began to push out leaves—long, narrow and sprawling, but not a sign of a flower bud, and I began to fear that as collected bulbs they were not going to flower. It was not until the middle or end of January that one or two buds began to push up. In February I heard that Mr. Lionel de Rothschild's plants were going to flower, and in February and March Mr. Bedford brought flowers from Exbury to the R.H.S. shows. One lovely picking of a dozen or so heads on February 26 was just not quite fresh enough, Mr. Bedford thought, to put before the Floral Committee, but their fragrance and grace were all there, and they made a decidedly good impression on all who saw them. To me they recalled vivid memories of sun-drenched hillsides at Coquimbo. Mr. Bedford grows his Leucocorynes in a house with Freesias, and gives them the same treatment. Here my first flower opened on March 13, rather a deep-coloured type, one-and-a-half inch in diameter, and one of a head of three. I gathered it with another head of two unexpanded buds, and brought them into a living room to find out how the buds would open in water, and how the flowers would last. Six days later all the buds had fully expanded and were entirely satisfactory as to substance, colour and scent. An important point this, from the cut flower point of view. The second spike had flowers exactly two-and-a-half inches in diameter. At the time of writing, they had been in water for eight days and were still as good as ever. *Clarence Elliott.*

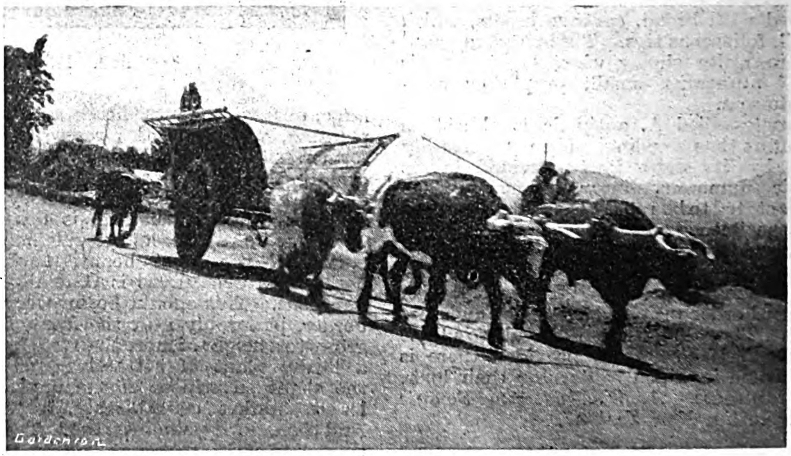

FIG. 174.—A CHILIAN FARM CART.

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* Previous articles on Mr. Clarence Elliott's expedition were published in our issues of November 12 and 26, December 10 and 24, Vol. LXXXII; January 7 and 28, Vol. LXXXIII; July 28, Vol. LXXXIV; March 23, April 6 and 20, Vol. LXXXV.

PLANTS NEW OR NOTEWORTHY.

JACARANDA ATROLILACINA, N. SP.

ONE of the commonest flowering trees in cultivation in the sub-tropical and warmer parts of Australia is Jacaranda acutifolia, H. Bonpl. (J. ovalifolia, R. Br.; J. mimosaefolia, D. Don.). About Brisbane, this tree makes a wonderful showing in the spring months with its large panicles of flowers, mostly of a pale lavender colour.

In going through one of the Brisbane parks a short time ago, I saw two trees of another species of Jacaranda I thought might be Jacaranda tomentosa, R. Br., but as they did not quite agree with Bureau and Schumann's description of that species as outlined in the *Flora Brasiliensis*, I sent specimens to the Royal Botanic Gardens, Kew, for examination, where they were reported on by Mr. V. S. Summerhayes, as follows :—

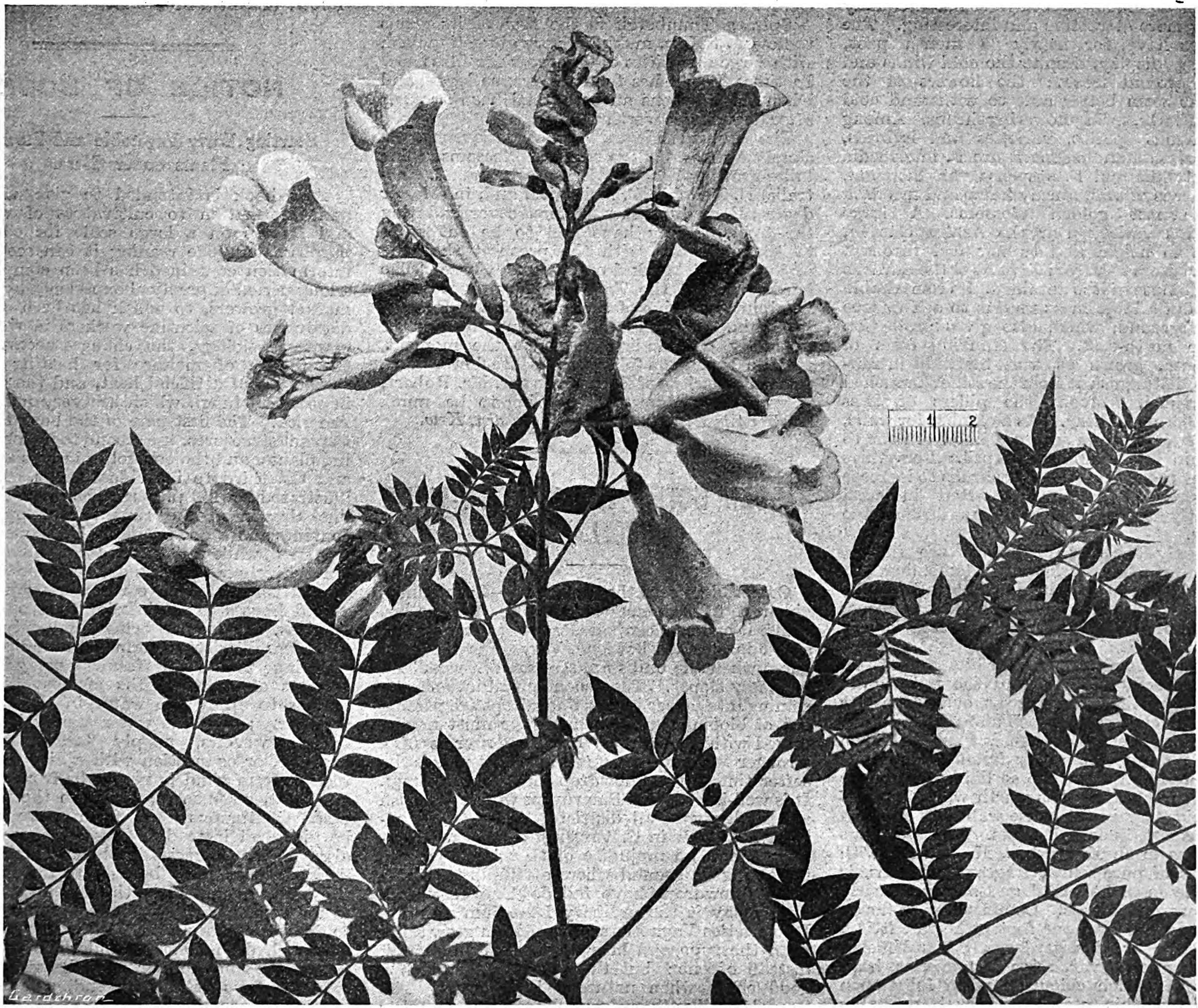

FIG. 175.—JACARANDA ATROLILACINA.

"The plant sent as Jacaranda tomentosa, R.Br., agrees with that species in its indumentum, a character with regard to which J. tomentosa occupies an isolated position in the genus. Mr. White's specimen differs in having a truncate calyx with sharp teeth, while J. tomentosa has blunt calyx lobes. In addition, the leaves are more compound in the Queensland specimen and the leaflets are more sharply pointed. It is possible that the specimen is a hybrid between J. tomentosa and J. acutifolia, H. Bonpl., but, on the other hand, it may be an undescribed species. It agrees with no other species of Jacaranda in our collections."

Nothing is actually known about the origin of the two trees, one of which stands on either side of the main entrance gates of the New Farm Park. Mr. H. Moore, City Parks Superintendent, tells me they were planted out as young trees from the town nursery of the Queensland Acclimatisation Society soon after it was taken over by the Brisbane City Council. Mr. E. W. Bick, Curator of the Brisbane Botanic Gardens, and at one time propagator to the Queensland Acclimatisation Society, tells me he thinks the seeds were sown as J. heterophylla, but I cannot trace this name in literature.

I have now decided to describe the tree, naming it in reference to its dark lilac flowers. Some readers of *The Gardeners' Chronicle* may recognise the tree either in the wild or in garden culture, and if so, I would like them to write to this effect.

Jacaranda atrolilacina, C. T. White, n.sp.* (Fig. 175) is a small tree about 6 m. high, with a rather spreading crown; young branchlets, teeth. leaves and inflorescences clothed with a soft, velvety pubescence; branchlets four-angled, but the angles rounded, flattened at the nodes. Leaves impari-bipinnate, up to 30 cm. long and 15 cm. broad, mostly with eight pairs of pinnae; lowest pinnae 4 cm. long and 5–7 foliolate, middle pinnae up to 12 cm. long and 21 foliolate; the uppermost pinnae smaller, but up to 17 foliolate; lateral pinnules 1·5–2 cm. long and about 7 mm. broad, ovate-lanceolate or broadly lanceolate, oblique at the base, acute at the apex; terminal ones mostly longer and narrower and drawn out towards the apex into a long, acute point up to 3 cm. long. Inflorescence a terminal panicle of 15–20 cm. diameter, branches and pedicels slender. Calyx 4 mm. long, velvety pubescent outside, with five acute Corolla deep lilac; the inside of the tube has a broad, white band along its length on the lower side; velvety pubescent outside and with a few rather long, scattered hairs here and there inside; tube 4 cm. long, lobes about 1 cm. long, and the same across. Stamens four, fertile; filaments thickened and papillose-hairy in the lower part, curved and glabrous in the upper part, the two longer ones 2 cm., the two shorter ones 1·5 cm. in length; anther cells divaricate, about 3 mm. long; staminode 3·5 cm. long, papillose-pubescent in the upper two-thirds. Pistil glabrous, disk 2 mm. high, ovary 2 mm. and style about 3 cm. long. Capsule not known.

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* *Jacaranda atrolilacina, C. T. White, n. sp.*—Abor ca. 6 m. alta, ramulis novellis foliis inflorescentiisque velutino-pubescentibus, ramulis novellis subangularibus ad nodos complanatis. Folia impari-bipinnata ad 30 cm. longa et 15 cm. lata plerumque 8-jugata, pinnis infimis 4 cm. longis et 5-7 foliolatis, pinnis intermediis ad 12 cm. longis et 21 foliolatis, pinnis supremis minoribus sed ad 17-foliolatis; pinnulis lateralibus 1·5-2 cm. longis ca. 7 mm. latis, lanceolatis vel ovato-lanceolatis ad basin obliquis ad apicem acutis, pinnulis terminalibus plerumque angustioribus et longioribus apicem versus angustatis ad 3 cm. longis. Inflorescentia 15-20 cm. diam. ramulis et pedicellis gracilis. Calyx 4 mm. longus extus velutinus, truncatus, dentibus 5, acutis. Corolla atro-lilacina extus velutino-pubescens intus pilis paucis obsita, tubo 4 cm. longo, lobis ca. 1 cm. diam. Stamina fertilia 4, filamentis basin versus incrassatis et papillosis, 2 longioribus ca. 2 cm. et 2 brevioribus ca. 1·5 cm. longis, antherarum loculis divaricatis angustis ca. 3 mm. longis, staminodio 3·5 cm. longo in parte superiore papilloso. Pistillum glabrum, disco 2 mm. alto, ovario 2 mm. et stylo abt. 3 cm. longo. Capsula ignota.

Described from cultivated tree, New Farm Park, Brisbane. C. T. White, No. 3,265, 19-10-1926; No. 5,595, 7-3-1929. *C. T. White, Government Botanist, Brisbane, Queensland, Australia.*

NOTES FROM KEW.

Notwithstanding the unfavourable, cold weather and lack of rain, trees and shrubs in the pleasure grounds and arboretum, are daily becoming more attractive and interesting. The Forsythias have, for nearly a month past, made a gay display, despite the cold winds and morning ground frosts; the flowers of the Forsythias seem better able to withstand cold than most early, spring-flowering shrubs. Among the numerous species, varieties and hybrids, the two of outstanding merit are F. intermedia var. spectabilis and F. suspensa var. Sieboldii. The former is of stiff, sturdy habit and has dark yellow, almost golden blossoms. A large bed of this variety near the Azalea Garden, nine feet in height and twenty feet through, attracts visitors to it from all parts of the Gardens where a glimpse of it is obtained. Its remarkable beauty is in a large measure due to a Yew tree as a background, which also gives protection from the north-east. The climbing form of F. suspensa, grown as var. Sieboldii in nurseries, to distinguish it from the stiffer-branched var. Fortunei, festoons the pillars of Miss North's Picture Gallery. As a climber for walls, fences, verandahs and arches, I know of none to equal it in late March and April. Forsythias are among the easiest of hardy shrubs to increase by soft-wooded cuttings, inserted in sand in a slightly heated propagating case during June and July.

The early-flowering Magnolias are nearly, if not quite, a month later in blossoming this year. The first to open its flowers was Magnolia salicifolia, very closely followed by M. conspicua, M. stellata and M. Kobus. M. salicifolia is very distinct in habit; of slender, upright growth, it is almost Lombardy Poplar-like in outline. It is a native of Japan, and the pure white blossoms are followed by narrow, oval-lanceolate leaves. M. conspicua, the Yulan or Lily Tree, which has pure white flowers, is the best known of all the Magnolias. Very free-flowering, the white, Lily-like flowers are so liable to damage by spring frosts that it is worth while to plant M. conspicua against a house wall with a south or west aspect, in cold districts. For lawn beds and groups in shrub borders, M. stellata, with its masses of pure white, fragrant blossoms, is one of the most beautiful and showy of early spring-flowering shrubs. Commencing to flower when not more than one foot in height, it is a useful shrub for villa gardens. Several bushes of the pink form, var. rosea of nurseries, have retained their rich colouring when fully open much longer this year than usual, probably because of the cool weather. M. Kobus is flowering freely on a wall; its robust, tree-like character is shown by the growth of the branches far above the limited height of the wall. The specimen in question has attractive, white flowers and is one of the good forms of M. Kobus, which varies considerably when raised from seeds.

The Flowering Currants, varieties of Ribes sanguineum, are attractive subjects for shrubbery borders during April. In addition to the species, which has showy, rosy-red blossoms, there is var. splendens, with glowing red, pendent blossoms; and var. atrorubens, deeper still in colour but with not quite such large racemes of flowers, nor so free in growth as the type. If only one form had to be grown, most flower lovers would choose the variety King Edward VII, an attractive bush with bright, dark red blossoms. When space permits, the variety album, white, and variety carneum, pink, are deserving of attention to give variety of colour.

The Buffalo Currant of the Central United States, Ribes aureum, is very distinct and beautiful among April-flowering shrubs. The golden-yellow blossoms are borne freely along the branches, and they have a pleasing fragrance. R. Gordonianum, a hybrid between R. sanguineum and R. aureum, is a desirable, free-flowering shrub of robust habit, with rosy-red flowers, shaded with yellow inside.

A large bed of the double-flowered Peach, Prunus Persica var. carneo pleno (Clara Meyer of nurseries) is attracting hosts of admirers. The specimens are producing their rich rose-coloured blooms with unusual freedom, perhaps because the frosts delayed the development of the flower buds. They have certainly escaped damage by bullfinches this year. Elsewhere, the white variety albo pleno, var. sanguineo pleno, and var. magnifica, crimson, are flowering freely.

Spiraea Thunbergii is the first of its genus to flower at Kew, making a very attractive bush with large quantities of dainty, white blossoms. In time, the bushes tend to become leggy, and when this happens an occasional hard pruning after flowering is worth while.

The hybrid Heath, Erica darleyensis, is simply a mass of deep rosy-red blossoms. The taller-growing Heaths, Erica arborea, E. australis, E. Veitchii, E. lusitanica, and, in a lesser degree, E. mediterranea, suffered severely during the frosts. Many have had to be cut back to the old wood with the prospect that the majority will break from near the base. The hardiest of all the Tree Heaths proves to be E. alpina, a native of the mountains of Cuenca, in Spain. This is quite undamaged, and of distinctly outstanding merit at the moment, with its dark green foliage and white flower buds. The white variety of E. australis var. Mr. Robert, is very little damaged, proving to be much hardier than the species. *A. Osborn, Kew.*

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

One seldom sees the Snowflake—Leucojum—given a fair chance of showing its quality, which it cannot do when clumps of it are dotted about in a mixed border. Very different is the effect when the bulbs are scattered in woodland or grassy slopes. They soon spread into sheets, coming into flower just as Snowdrops are passing out of bloom; but the Snowflake must not be mixed with Snowdrops, for its flower is of a stronger and more opaque white that makes the softer tint of the Snowdrop look almost dingy. It is well-known that Snowdrops will not flourish and multiply in all districts. They are somewhat fastidious in that respect; but the Snowflake shows no prejudice of that kind, rapidly increasing in ground where attempts to naturalise Snowdrops have failed. The best form for display is the ordinary Leucojum vernum. Its varieties Vagneri and carpaticum grow taller than the type and bear two heads on a stalk instead of one; but they do not give such a good effect when naturalised in sheets. The Snowflake, like Snowdrops, Narcissus and other members of the Amaryllis family, enjoy complete immunity from rabbits.

The colours of spring flowers are so strong that it is well to note accidents of harmony and contrast with a view to re-arrangement. A pleasing group that commands approval at present is formed by a self-sown scattering of Narcissus bulbocodium var. citrinus, among which the scarlet Tulipa praestans and Muscari conicum var. Heavenly Blue show to much advantage. Another pleasing combination has come by chance from Aubrietia deltoidea var. graeca spreading a lavender carpet under Narcissus Queen of Spain.

On the other hand, a heavy job awaits transaction in autumn in the transplanting of three large bushes of Rhododendron praecox beside which R. neriiflorum has risen to a height of five feet, its scarlet trumpets jarring painfully with the rosy cloud of the others.

We are learning more as the season advance about losses sustained during the past winter. The Chilian Ercilla volubilis, more commonly known as Bridgesia spicata, having grown in twenty years to the height of eighteen feet on a south wall, has been killed outright. The loss does not afflict one, for it is not a plant of decorative merit; and close to it Berberidopsis corallina has not suffered at all. On the same wall, Abelia floribunda, which has never flinched during many previous winters, is badly disfigured, while Calceolaria violacea along the foot of the wall has been cut back to the roots. On other walls, large plants of Abutilon megapotamicum are defunct, only one surviving through shelter of overhanging eaves. All this damage is attributable, not to unusually low temperatures—we never had more in the air than 12° of frost—but to the furious winds of February, which intensified the effect of the cold. *Herbert Maxwell, Monreith.*

NOTICE OF BOOK.

Starting Early Vegetable and Flowering Plants under Glass.*

This book is intended to give suggestions and information to cultivators of vegetables and flowers on a large scale for commercial purposes. Anyone reading it can see that the information contained has been compiled from a long period of practical experience by ordinary market growers, to which has been added the discoveries of scientific workers in the field of plant physiology, the changes necessary from the failure of manure for heating purposes to the use of artificial heat, and the control of insects and fungi, which are very numerous in America. The first part of the book is devoted to plant structures, the second to factors in growing plants, and the control of insects and fungi, and the third to individual crops. It is well illustrated by 153 photographs, including a few line drawings, and runs to 302 pages, with contents and a good index. The paper is heavy and good, while the type is large and readable.

Relatively steep roofs are considered superior to flattish roofs for early work, and double glazed houses much inferior to a single layer of glass, the former being used only in cold, northern districts. Permanent equipment for watering plants in frames or greenhouses consists of short lengths of hose fitted with nozzles to apply the water in the form of a fine spray; and the water supply is available from reservoirs, supply tanks, pneumatic pressure, or connection with a city main. Protection from wind is necessary from the north and west, whereas we say from the north and east. Continuous cold frames are made to be ploughed instead of dug, because labour is always the biggest problem. Hot-beds of various types have been used for more than thirty-five years. For these frames, the hot-water type of heating is more expensive and not so durable as flues of vitrified tile. One form of heating had an air space under the beds, where the smoke and hot air moved slowly towards two chimneys at the far end, so that if one became inoperative owing to wind, it could be closed. Heating with manure and electricity show no decided advance, so far as plant growth is concerned.

Sash greenhouses are now taking the place of hot-beds because they are more economical in the matter of heating, suitable moisture and ventilation. Lean-to houses and two-thirds span must always face to south, but in even-span houses, the author considers they may run north and south, or east and west. Sunk houses are easier to keep warm than those above ground, but this depends on the water-level in the soil, because the stokeholds would get filled with water, drowning out the fires, if the water level were near the surface. Growers aver that they can get stockier plants grown upon solid than on raised benches, with less watering. Hot water and vapour systems of heating are preferred to steam heating because a more even temperature can be maintained, whereas the steam cools so quickly that night attention may be necessary. The boiler should be one size larger than is actually necessary, as it requires less attention. Tile, flue-heated houses are very satisfactory where wood fuel is abundant. The wood must be kept smouldering to avoid excessive heat, and the furnace requires feeding only three times a day.

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* *Starting Early Vegetable and Flowering Plants Under Glass.* By Charles H. Nissley, Extension Specialist in Vegetable Growing at the New Jersey State Agricultural College. Illustrated. New York: Orange Judd Publishing Company, Inc. London: Kegan Paul, Trench, Trubner and Co., Ltd. Price $3.

The acreage of transplanted crops in the United States, such as Cabbages, Cauliflowers, Tomatos, and other commercial truck crops, is 1,397,360. Large and heavy Sweet Pea seeds give earlier blossoming, and more and larger flowers, and this also applies to Pumpkins, Lettuces, Spinach, Parsley, etc. The author suggests screening the seeds, but that seems to be the seedsman's business. A common custom is to sow more seeds than are really wanted, and to pick out the strongest plants, just as is done in Britain. With reference to the longevity of seeds, he states that absence of moisture and an even temperature in the storage house is the controlling factor in seed life. In a state of nature seeds in the soil may be moist enough over a long period of years, but here the controlling factor may be the absence of sufficient air. Well-matured seeds in store keep longest.

Soils for the making of composts, including manure and turf, are prepared one year previous to use, or even two. To avoid diseases, which are numerous in the United States, it is recommended to move the frames, or soil, or sterilise it. Sterilisation by steam is considered the best method, and by formaldehyde the second best. Rubbish is sometimes burned on frame beds to sterilise the soil. Clay pots are reckoned the best for all purposes, where plants have to be established to enable them to transplant easily, but several other plans are adopted in some places. Experiments were made in the hardening of plants to discover what really took place. Tomatos showed a greater transpiration with a rapid replacement of roots, so that accumulated foods were used in root growth. Cabbages showed a slowing of growth, more bloom on the leaves, which were thicker than non-hardened leaves, with a greater resistance to cold.

In the control of insects, it is stated that the alcoholic extract of Pyrethrum flowers in a solution of soap, is more powerful than nicotine, and when used as a spray, will kill all insects in the course of a few minutes up to twenty-four hours. Many names are given to preparations of Pyrethrum powder in America; and evidently some of the non-poisonous insecticides in this country are of a similar composition.

Readers of the book in this country will find a curious use of some words, such as sash and tile in the plural sense, as we use sheep, deer, fish, etc. Other cases are dehis for dehisce, adsorption for absorption, etc. In such words as labor, vapor, etc., the Americans have adopted the pure Latin instead of the Norman French spelling used in this country. All the same, the instructions given in the book could be put to much practical use by market gardeners and growers on a large scale in Britain.

BULB GARDEN.

NARCISSUS RUPICOLA, DUF.

Although figured in the *Bot. Mag.*, t. 6,473, in 1880, this charming little species does not appear to be as common as one might expect. It is very closely allied to N. juncifolius, in fact coming from the same region of the Sierra de Guaderrama. On the average, N. juncifolius flowers a little sooner, while the most striking difference is the sessile or stalkless flowers and the boat-shaped ovary of N. rupicola as compared with the round ovary and stalked flowers of the former; otherwise the appearance of both, when in flower, is very similar.

The rich yellow flowers are borne on stems three to five inches long, stiffly erect and slender. The boat-shaped ovary, some half-an-inch in length by an eighth-of-an-inch in breadth, nestles at the base of a beautiful spathe three-quarters-of-an-inch in length. The perianth tube is three-quarters to an inch-and-a-quarter in length by an eighth-of-an-inch in breadth, and strikingly slender when compared with the corona, the latter being a quarter-of-an-inch in breadth and three-sixteenths to a quarter-of-an-inch in depth, of the same colour as the petals, strikingly mucronate and slightly reflexed. The anthers, six in number, are sessile; the style also is shorter than the perianth tube.

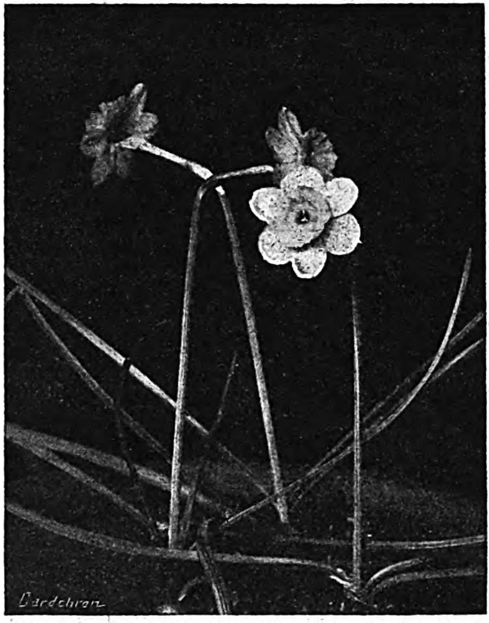

FIG. 176.—NARCISSUS RUPICOLA.
Broad-petalled and spreading-leafed form.

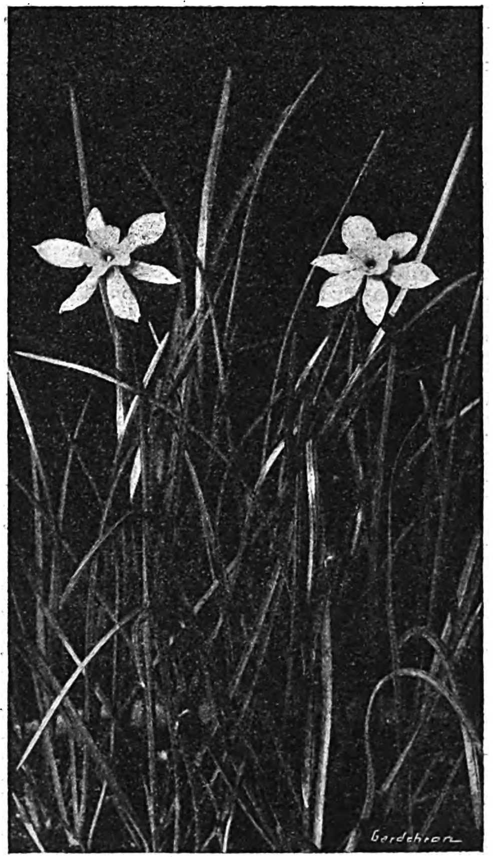

FIG. 177.—NARCISSUS RUPICOLA.
Narrow-petalled and erect-leafed form.

The leaves, arising from a small, ovoid bulb half-an-inch to three-quarters-of-an-inch in diameter, with a cylindrical sheath produced to an inch above the neck, are glabrescent, three to eight inches in length and up to an eighth-of-an-inch in breadth, with a distinct groove running down the centre of each.

The species appears to be variable, for in some instances the leaves are many and stiffly erect, while others are almost horizontal, with a slight upward tilt at the apex and much more glabrescent. In the erect-leafed type (Fig. 177) the petals are long and narrow, and the flowers carried on long, slender stems; in the spreading form (Fig. 176) the petals are almost round, being much shorter and less reflexed than in the former. The coronas do not appear to possess such a marked difference, as in all types they may be sharply cut into three or more lobes, or may be merely frilled.

The bulbs are perfectly hardy, having withstood the past severe winter outside in pans, although some of the forms would appear to be shy flowerers, while others, mainly the broader-petalled types, have all borne flowers. N. rupicola should be an excellent species for planting in well-drained, not over-exposed, positions in the rock garden. *A. Edwards, Kew.*

HOME CORRESPONDENCE.

Manuring Arable Land.—In answer to *C. de B.* re the above (p. 314) it is quite possible to plough in twenty to twenty-four tons of manure to the acre. Like *C. de B.*, I was bred and brought up on a farm, and turned to horticulture, but retain a keen interest in all appertaining to the farm. The manure should be fairly rotten and not too long, and it must be spread evenly over the ground. When we used four horses in a swing plough (what they used to call a digger—the slide share being more in the nature of prongs), from the coulter to the furrow we had a stout, short chain with a weight at the end; this drew all the manure and stubble into the furrow. With four good horses and a swing plough (one without wheels) one may go to a good depth and cover all the manure in. I have had no experience of farm tractors, so cannot speak for or against them. *T. B. Rawdon.*

The Colours of Flowers.—If anything was needed to prove the need of a colour-table for horticulturists, like those adopted in France and Germany, it is given by the recent statements made by the writer of some notes on blue-flowering plants. We are informed that "the first blue effects of the year are obtained from some of the Crocuses," among other spring-flowering bulbs which he names. Violas and "blue" Aubrietias are also included. We are also informed that Scabiosas, Michaelmas Daisies and some of the Geraniums contribute their share of blue to the borders, while "amongst climbing plants, blue is a predominant colour of the larger Clematises"! To those who regard the word blue as having a definite colour-value it is distressing to have it used in this misleading, indefinite way merely as a "generic" term. In the colour-scale we have mauve and purple all getting colder in tone until we reach the blue and cold spectrum-violet at the limit of our visional response. It is very trying that horticulturists have to tolerate the statements of those who persist in confusing these colours, while in the world of music a man is not allowed to persist in playing or singing C flat, C natural, or C sharp for D. Here, if we have any doubt, we have a tuning-fork to guide us, and so we want a colour-table or some definite guide to prevent distressing colour discords reaching our eyes. Sounding two semi-tones together is not more distressing to the ears than seeing Aubrietia and Myosotis placed together and hearing that Crocuses and Clematises provide blue colour. The writer of the note referred to does not even mention Plumbago capensis, the Gentian, Chicory, the Hyacinth, Cineraria, Ceanothus, the Cornflower, and a host of true blue plants available. *A Distressed Horticulturist.*

Antiseptic and Cooling Properties of Volatile Essential Oils.—I was interested in reading in your pages a few weeks ago (p. 192), the report of a lecture, in which the antiseptic powers of the vapours of volatile vegetable oils was referred to. Professor Chamberlain made experiments which proved this. Culture tubes containing bacilli were treated with various essential oils and were opened six days afterwards, when living cultures appeared in some of the tubes, but not in all of them. Thus it was inferred that in some, the essential oils had destroyed the vitality of the bacilli. Those which proved most effective were Cinnamon, Angelica, Geranium and Origanum. The following essential oils killed the germs of typhoid in the times stated below :—

Cinnamon of Ceylon ...	in 12 minutes.
Cloves	in 25 „
Eugenol	in 30 „
Thyme	in 35 „
Wild British Thyme ...	in 45 „
Verbena (India)	in 45 „
Geranium (France) ...	in 50 „
Origanum	in 75 „
Patchouli	in 80 „
Absinthe	in 4 hours.
Sandal Wood	in 12 „

The essential oils of Lavender and Rosemary also possess great antiseptic properties, but the powerfully (and to many, disagreeably) smelling Eucalyptus appears to have been much overrated. Those interested in the question may read a record of experiments made, in the *Text Book of Bacteriology*, written by Sternberg, published in 1897. The use of odour in protecting the plant producing it was investigated by Professor Tyndall, who made a series of experiments to test the absorption of heat by odorous vapours. As compared with unscented air the action is astonishingly powerful, Cassia,* it was found, had 109 times the cooling effect of fresh air. Perhaps the following table of Tyndall's may be of interest :—

Perfumes.	Absorption per 100.
Patchouli	30·0
Santal	32·0
Geranium (Pelargonium)	33·0
Oil of Cloves	33·5
Attar of Roses	36·5
Bergamot	44·0
Neroli	47·0
Lavender	60·0
Lemon	65·0
Portugal	67·0
Thyme	68·0
Rosemary	74·0
Oil of Laurel	80·0
*Cassia	109·0

There can be no doubt, therefore, that the volatilization of these essential oils is largely instrumental in protecting the plants producing them against the heat of the sun. Even the exquisite perfume of our beloved garden flowers serves to protect the blossoms and so lengthens the time in which they can attract their insect friends whose visits are so important for the production of fine seeds and the vigour of their race. They render our gardens not only more attractive, but more refreshing and health-giving for us. *H. H. Warner.*

The Future of the Potato.—I have been greatly surprised that so little notice has been taken of what, to my mind, is the very dangerous suggestion of Mr. Cuthbertson (p. 251) in regard to retaining seedling Potatos that are susceptible to Wart Disease. It is nearly twenty years since I first experienced the deadly destruction caused by this disease in the Potato crop. The area infected was a large rural village in the north-west midlands, where every cottage garden was so badly infected that very little more than a stone of sound tubers could be obtained from every sackful lifted, and this condition had prevailed for years. As the Potato crop is one of the mainstays of the workers' homes, this state of affairs was serious. A stock of immune varieties was obtained and distributed; they proved a God-send in that village, as they have done in hundreds of villages in our country. Since that period, I have had considerable experience in half-a-dozen counties where Potatos are largely grown, and I maintain that anyone who is familiar with the devastation caused by Wart Disease in the Potato crop (and I have seen an area of three acres rotten with it) cannot be otherwise than horrified to see this dreaded disease written of as a mere bogey. Our Potato breeders have done excellent work in raising good immune varieties possessing the necessary three qualities which make a good Potato, viz., good cooker, good cropper and good keeper. What could one wish for better than the following varieties : Immune Ashleaf, Arran Comrade, Catriona, King George, Great Scott, Majestic, Bishop, Kerr's Pink, Arran Victory and Golden Wonder ? The commercial grower, the exhibitor, and the epicure have their desires met in the above varieties. We still want more first-early immunes, but I am quite sure our Potato breeders will yet prove capable of producing them. Another aspect of the situation should, I think, also receive consideration ; that is, the export trade in seed Potatos. Good markets abroad can be obtained for certified clean stock, and the greatest danger to-day to the necessary clean bill of health is the prevalence of Wart Disease. I know of more than one commercial grower who could not obtain a certificate for export because he was too near an infected area. The excellent work on this subject carried out in the past by men of practical and scientific knowledge like Gaut, Gough, Snell, Malthouse, Bryan and others, cannot be lightly passed by ; rather let us aim at wiping out such a disease by clearing off the map all susceptible varieties. The powers that be have been far too weak-kneed in dealing with this question in the past, and vested interests have overruled common sense. *W. S. S.*

Gardeners' Pay and Status.—*H. B. O.* is lavish in his praises of the P.G.A. (p. 125), and Mr. Capp (p. 249) is also convinced this Association will improve matters for the professional gardener. I was a member of the old British Gardeners' Association in pre-war days—does the P.G.A. work on similar lines ? If so, I am afraid it will not make much headway. *H. B.* states that a £2 per week man is only worth that wage ; perhaps he is right, but I do not agree with him that if a man, knowing his worth, asks £4, he will nearly always get it. £4-a-week posts are few. I know from experience that many a good man, through no fault of his own, has been compelled to accept much lower wages. I started gardening when twelve-and-a-half years old, and have been at it for twenty-eight years, and force of circumstances compelled me to accept lower wages than I asked for. If *H. B.* had been in my position a year ago he would have found, as I did, that wages offered were low. I was offered nothing over 50s. Do the R.H.S. and the various local gardeners' associations advocate a good wage ? One does not see mention of such policies in their publications. Are they not more concerned with getting a greater membership, irrespective of the applicants' knowledge of gardening ? Again, to my mind, the various items on gardening in the daily press are not good for the gardening profession. What other profession publishes its knowledge in this fashion ? I have discussed this subject with many gardeners, and all agree that it is detrimental and should be discouraged. However, I have applied to the P.G.A. for its literature, and shall then judge whether it is worth joining ! *E. O.*

Arenaria norvegica.—In answer to Dr. Claridge Druce re Arenaria norvegica (see page 300), I am unable to confirm the suggestion that the plant was to be found on North Ronaldshay, Orkney Islands. Although not having access to Sowerby's *Flora* at the moment, I was in a position to consult that work when growing the plant two or three years ago, and then made a mental note of the reference quoted. The article stated that A. norvegica had been *reported* from North Ronaldshay, and, my authority being Sowerby, it would appear to have been substantially true at the time his *Flora* was published, although the statement may have been deleted from later editions. If, as Dr. Druce suggests, the record is possibly unfounded, this is an interesting point which may, perhaps, be definitely explained by someone more in touch with botanical investigation than myself, or by some reader who has been fortunate enough to visit North Ronaldshay in quest of plants. *L. B. C.*

VEGETABLE GARDEN.

RUNNER BEANS.

The Runner Bean ranks as one of the most important crops in the kitchen garden during the summer and early autumn, and rightly so.

To obtain good results, seeds may be sown early in May in boxes or pots of good, friable soil, consisting of two parts loam sifted through an inch sieve, one part leaf-soil, and one part well decayed horse manure, the two latter sifted through a half-inch sieve. A little silver sand may be added to keep the compost porous. For general cultivation, boxes about fifteen inches square and four inches deep will make ideal receptacles for the seeds ; crock them carefully, and place some rough material over the crocks to facilitate good drainage, then fill the boxes with the soil and press the seeds in edgeways about two inches apart ; cover them with soil, and firm the whole gently. Water the seeds in with a rosed can, and place the boxes in a vinery or Peach house that has been "started," covering them with paper to conserve the moisture. The paper should be removed when the seedlings commence pushing their way through the soil, and the boxes placed as near the glass as possible ; a suitable place for a week or so at this stage would be a heated frame where the plants will be close up to the glass, and at the same time, safe from night frosts ; afford plenty of air all day to promote sturdy growth.

As the plants gain strength, they may be removed to a cold frame and gradually hardened off preparatory to being planted out.

In the meantime, attention must be turned to the site they are to occupy. Select an open, sunny position, and if the ground has been well trenched and manured during the winter, so much the better, but if this has not been practicable, trenches about two feet wide and eighteen inches deep should be made, preferably running north to south. Thoroughly break up the bottom of the trench, and mix in plenty of rough garden refuse, especially if the subsoil is heavy. Then place some of the soil back again, incorporating with it some well-decayed farmyard manure. Place the rest of the soil on this, leaving a slight depression all along the trench to catch and conserve the rain-water, and so save much labour in watering. The sticks or poles may be placed in position about a week before planting time. Stout poles should be placed at each end and at intervals along the rows, and a strand of wire run along about six feet from the ground, and stretched as tightly as possible. If thin poles are used, one should be placed for each plant at about a foot apart, and tied firmly to the wire. Give the ground a light dusting of old soot and fork it in lightly, when all will be ready for planting. Some growers prefer long, bushy Pea sticks as supports, but these should be placed so that the tops are not too close.

Do not plant Runner Beans closer than a foot apart, for nothing is gained by overcrowding them. Provided the plants have been hardened off, they may be planted out about the first week in June, choosing a warm day when the soil works well. Lift the plants from the boxes with as much soil to the roots as possible, plant them firmly, and, when the row is completed, water them in if there is no danger of frost or a cold night, from which the plants should be protected with tiffany or leafy branches ; the plants will take no harm for a day or so if watering is impracticable. The young growths may possibly need assistance up the poles or sticks, and each one should be tied to encourage it to climb ; afterwards, there will be no trouble in this respect. If the weather proves warm and dry, a good syringing overhead every afternoon will greatly benefit them, but they need not be given a lot of water at the roots for some time, and if the ground has been well prepared, they will not require it. Later on, when the plants are well up the supports and bearing heavy crops of Beans, they will need copious supplies of water, and occasionally a good soaking of liquid farmyard manure, diluted with soft water if possible; in any case, only water that has been exposed to the sun should be used. Cold water from a main is likely to cause dropping of the flower buds, which is most likely to occur when the plants are producing their first trusses of bloom. Hoe between the rows frequently, and, if drought sets in, mulch the ground about the roots with stable litter, or any material that is not of close texture, and will allow a certain amount of sun and air to reach the roots.

If Runner Beans are required to produce good specimen pods for exhibition, they will, of course, require extra attention. The growths should be kept well thinned, and each truss of flowers should be thinned, two or three Beans only being allowed to develop from each, and these should hang clear of the vine and foliage so that they may develop into long, straight pods. The chief object is to have fine, long pods, devoid of any coarseness of texture, as this will tell against them in close competition. Some varieties are apt to produce a coarser type of pod than others when size is aimed at, and these should be avoided. The pods should be picked so soon as ever they are ready, and the ends placed in cold water in a cool room, when they will keep in good condition for several days. They should be absolutely smooth, with no suggestion of swelling seeds within, and should be well coloured. Attractive arrangement is important, especially in single dish classes. Twelve Beans are usually asked for, and these look best if arranged on dark green foliage on a plate. It is a mistake to use too large a dish, as is often done, as it has a dwarfing effect on the pods.

Many growers have not the facilities for sowing Runner Beans in pots or boxes as suggested, but they need not despair, as very fine produce can be procured by sowing them out-of-doors. If outdoor sowing is practised, the supports should be placed along the rows previous to sowing the seeds. The seeds should be placed about six inches apart, making the holes with the trowel and placing one seed in each, edgeways, which reduces the risk of their rotting off if the weather should be cold. If the seeds germinate well, as they should do, every other seedling may be discarded.

All pods should be picked so soon as ready, as, if allowed to hang on the plants too long, they not only become tough and unpalatable, but retard the progress of others. All surplus should either be sold or sent to the kitchen to be salted down for winter use. The latter is an easy process, and the Beans will be much appreciated when vegetables are scarce. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

ORDER OF FLOWERING AND POLLENATION OF FRUIT BLOSSOMS.*

(*Concluded from p.* 333).

INSECT VISITORS TO FRUIT BLOSSOMS.

I HAD hoped to devote a good deal of time to the insect visitors to fruit blossoms, but the length of the paper does not allow it.

There are a great many different kinds of insects that visit fruit blossoms, especially the Apple.

For several years I made brief notes on those I noticed and added up their numbers, which are given in the attached table. I am glad to state, since I made my observations as a mere naturalist, Mr. G. Fox Wilson, as a trained entomologist, has made a far more complete list at the Royal Horticultural Society's Gardens, at Wisley, Surrey, and I would refer anyone interested in the subject to his well-illustrated report in the *Journal of the Royal Horticultural Society* for 1926.

Mr. Fox Wilson's and my records differ in some ways. The Royal Horticultural Society's Gardens are surrounded by common and woods; there was not a large acreage of fruit, and the nearest hive of bees was about three-quarters-of-a-mile distant, so wild insects were very numerous and hive bees not so abundant.

At Wye there is a considerable acreage of Cherries, Apples and other fruits, and a good many hives of bees are kept; the surrounding land is arable land and sheep pasture, which are not very favourable habitats for pollenating insects.

All entomologists who have studied the subject of fruit pollenation agree that the bee family, owing to the structure of the insects and their habit of keeping to one kind of flower on a journey, are by far the best fruit pollenisers of all insects.

The humble bees and the small wild bees do splendid work, but they are out of human control and cannot be increased in number. With high cultivation, wire fences replace hedgerows; so that the banks and woods where the wild bees make their home decrease in area; thus the value of the hive bee relatively increases.

Where there are large blocks of fruit trees the pollenation by insects is out of proportion to the capacity of the local wild insects, and it is therefore of great value to place hives of bees in different parts so as to have them near the Black Currants and Cherries and other fruits to carry pollen when the weather is favourable.

NUMBERS OF DIFFERENT KINDS OF INSECTS VISITING FRUIT BLOSSOMS.

RECORDED BY C. H. HOOPER AT WYE, KENT.

Fruit.	Hive bees.	Humble bees.	Small wild bees (Andrena & Halictus.)	Blue-bottle flies.	Other flies.	Beetles.	Ants.	Earwigs.	Thrips.	Other Insects.	Notes.
Almond	6	—	—	—	—	—	—	—	—	—	
Peach	9	5	...	2	...	1	—	—	—	—	
Pear	172	2	11	16	2	...	...	...	...	3	(2 midges, 1 white butterfly).
Plum	23	17	35	2	1	—	—	—	—	—	
Gooseberry ...	57	17	1	...	1	...	...	...	...	1	(1 wasp, 1 yellow fly).
Cherry	103	92	16			...	...	...	...	1	(1 spider).
Red Currant ...	10	1	...	...	1	...	...	...	...	...	(1 yellow fly).
Black Currant ...	36	12	5	...	....	...	...	...	...	1	
Apple	374	37	21	...	23	104	51	3	2	...	(beetles include 24 weevils a few hive bees).
Strawberry ...											
Raspberry (recorded by Mr. H. Chapelow)	797	32		...	24	—	—	—	—	—	
Loganberry (recorded by Mr. H. Chapelow)	1292	61		...	79	—	—	—	—	—	
Quince	4	...	...	...	...	...	many	—	—	—	

The American fruit growers keep bees extensively for the fertilisation of the blossoms rather than for the honey. In England one finds that many of the most painstaking and successful fruit growers keep bees with the object of increasing their crops.

It is advisable to distribute the hives rather than to have them all in one spot, the ideal arrangement being one hive to each acre of fruit trees.

It may be found practicable to take hives to fruit plantations just before blossoming time, and afterwards to remove them to where there is more diversity of flowers, in the same way that hives of bees are taken to the Heather moors. I have for three years taken out a hive to a Cherry orchard just before blossoming time, and brought it home after flowering was over, with satisfactory results.

It is stated that bees fly from their hives against the direction of the wind and have it with them when returning laden with pollen and nectar, so that it may be advisable for hives to face the direction of the prevailing wind.

As it is important to have the bees in the hive strong and in large numbers ready for their work in the early spring, they should, therefore, be left with sufficient food in the autumn for the winter, and will be benefited by being given syrup in early spring.

There are three ways of managing the bees on a fruit farm:—(1) For the owner to look after them; he may not have time or may not like bees, so (2) he can get one of his men to look after them, giving him a little higher wage; or (3) he can allow a bee-keeper to keep his hives in his orchards or even pay him, say, 5s. a hive, for the use of his bees.

I asked Messrs. Chivers and Sons, of Histon, Cambridge, their opinion about bees, and Mr. H. J. Chivers very kindly replied: "I am afraid that, unlike our American friends, we are unable to state very definitely the effect of bees on the pollenation of fruit. To our minds, it entirely depends on the type of weather just before and during the flowering of the fruit as to whether the bees are actually a great deal of good or not. However, as we keep about 500 stocks of bees, you will realise that we do believe in them."

CONCLUSIONS.

To summarise this paper, the points I wish to emphasise are:—1. That, if there are not sufficient wild insects, especially humble bees and the small wild bees, in the neighbourhood to pollenate the crop efficiently, pursuade someone to bring his hives of bees to your plantations and have the honey he gets as his reward.

2. In planting a new plantation or orchard of fruit trees, choose two or more varieties that flower about the same time, avoiding planting together varieties of Cherries that are inter-sterile; alternate the varieties every two or three rows.

3. Where trees of one variety have been planted in large numbers, interplant or regraft one tree in nine with another variety in order to get cross-pollenation, say every third tree in each third row.

Finally, I have to thank Mr. F. I. Neame and Mr. H. Stevens for allowing me the run of their farms in which to make experiments, and for answering many questions, also Mr. H. S. Rivers and Mr. E. A. Bunyard for making records of the order of flowering. I thank Mr. F. J. Chittenden, Director of, and Mr. A. N. Rawes, Experimenter at, the Royal Horticultural Society's Gardens, also Mr. M. B. Crane for much of the information included in this paper, and last, but not least, Mr. F. Edenden, of Wye, who prepared most of the lantern slides for me.

The paper was followed by a good discussion in which Messrs. H. V. Taylor, G. Fox Wilson, W. S. Rogers, A. H. Hoare, Stephen Mount, and H. Grainger took part.

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* A paper read before the Royal Society of Arts, Wednesday, February 13, by Mr. Cecil H. Hooper, F.L.S., of Wye, Kent.; Mr. H. V. Taylor, O.B.E., Commissioner for Horticulture, Ministry of Agriculture, presided.

SOCIETIES.

ROYAL HORTICULTURAL.

May 7 and 8.—There was a bright and interesting show at the new Horticultural Hall, Westminster, on these dates, in connection with the fortnightly meeting of the Society. Perhaps because the great Spring Show is to be held in a fortnight's time, Orchids were not so numerous as formerly. The Orchid Committee recommended one First Class Certificate to a new hybrid Orchid. There was a considerable variety of general flowers, and the chief were Hippeastrums, Nemesias, Roses, Carnations, Calceolarias, and alpines. The Floral Committee recommended six Awards of Merit to novelties and selected seven seedling double Primroses for trial at Wisley. Daffodils and Tulips continue in considerable beauty and, besides several handsome groups, the Committee had many novelties, of which they recommended one for the First Class Certificate and four for Awards of Merit. There was nothing before the Fruit and Vegetable Committee.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Sec.), Mr. R. G. Thwaites, Mr. A. McBean, Mr. J. C. Cowan, Mr. T. Armstrong, Mr. H. G. Alexander, Mr. J. E. Shill, Sir Frederick Moore, Mr. Arthur Dye, Colonel Stephenson Clarke, Mr. Lionel de Rothschild, Mr. Fred K. Sander, Mr. E. R. Ashton and Mr. C. H. Curtis.

First Class Certificate.

Sophro-Laelio-Cattleya Yokohama (S.-L.-C. Prince Hirohito × Cattleya Hesperus).—A very beautiful hybrid of fine size and form. The broad petals are salmon coloured, with soft, violet-rose veins, and the narrower sepals are of similar colour, but with heavier and straight veins of violet-rose. The lip is ruby-crimson, with rich old-gold shading in the throat and some bright gold veins. Shown by Baron Bruno Schröder (gr. Mr. J. E. Shill), Dell Park, Englefield Green, Surrey.

Groups.

The only group of any pretensions on this occasion was one arranged by S. G. Brown, Esq. (gr. Mr. Thurgood), Brownlands, Shepperton. In this display were good examples of Cymbidium Lowianum, Dendrobium infundibulum, Dichrysotoxum, D. Draconis, Oncidium McBeanianum, O. amplicatum, Cattleya Skinneri var. alba, Lycaste Skinneri var. alba, the greenish-yellow Polystachya lutescens, Phalaenopsis Rimestadiana, Odontioda Zephyr, Phaius Sanderianus, Cypripedium Nandii, Odontoglossum excellens, Saccolabium ampliatum var. majus, and the bright rose-red Trichopilia marginata. This was a very interesting display.

Messrs. Stuart Low and Co. had a small group which contained Cattleya Lawrenceana—now seldom seen, Laelio-Cattleya Luminosa in fine form, L.-C. G. S. Ball, Brasso-Cattleya André Maron, and a large example of Eria convallarioides. Mr. J. Evans showed Laelio-Cattleya G. S. Ball.

Robert Paterson, Esq. (gr. Mr. Merry), showed Odontoglossum Naomi, Stonehurst var., with rich red markings, and also the deep-hued Miltonia Memoria var. H. T. Pitt; Mrs. Carl Holmes and Gus Mayer, Esq., showed individual plants before the Committee.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. A. Turner, Mr. J. T. West, Mrs. Ethel M. Wightman, Mr. J. M. Bridgeford, Mr. E. R. Janes, Mr. A. E. Vasey, Mr. Hugh Dickson, Mr. M. C. Allwood, Mr. David Ingamells, Mr. W. B. Gingell, Mr. R. Findlay, Mr. William Howe, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mr. B. R. Long, Mr. G. W. Leak, Mr. W. Champion Hackett (visitor), and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Charles T. Musgrave (in the chair), Mr. W. G. Baker, Mr. F. G. Preston, Mr. G. Reuthe, Mr. L. R. Russell, Mr. A. Bedford, Lady Beatrix Stanley, Mr. James Comber, Mr. T. Hay, Mr. Eric M. Marsden-Jones, Mr. C. Williams, Sir William Lawrence, Bart., Mr. Gerald W. E. Loder, Mr. R. C. Notcutt, Hon. Henry D. McLaren, the Marquess of Hartington, Mr. T. W. Taylor, and Mr. N. K. Gould, Secretary.

Awards of Merit.

Anthurium Scherzerianum var. Ne Plus Ultra.—A magnificent spathe of more rounded shape than the species and rich scarlet colour. Shown by Messrs. Sanders.

Carnation Guy Allwood.—This appears to be a very desirable greenhouse Carnation. The flowers are large, of good form and of pleasing pink shades of colour. The broad petals are evenly serrated and the blooms are decidedly fragrant. Shown by Messrs. Allwood Bros.

Loasia acanthifolia.—This hardy annual is rarely seen in cultivation. The plant shown was raised from seeds collected by Mr. Clarence Elliott in south Chili, where it was growing at an altitude of from 5,000 feet to 6,000 feet, in a Nothofagus forest. As with others of the genus, the plant is set with stinging hairs which will penetrate stout gloves. The pinnatifid opposite leaves are decidedly suggestive of those of an Acanthus in miniature. The stout flowers are solitary on fairly long pedicels, and of bright orange colour with deeper coloured centres. The calyx segments are curiously hooded. Shown by Mr. Clarence Elliott.

Prunus nana.—The dwarf Russian Almond is stated to have been cultivated in this country since 1683. An illustration of a paler form is given in *Bot. Mag.*, t. 161. It is a dwarf bush, and, when freely flowered, is very attractive. The flowers were of deep pink colour. Shown by Mrs. Philip Martineau, Sunny Corner, Ascot.

Ramondia Nathaliae.—An excellent plant of this charming alpine was shown. The flowers were mostly solitary, erect, and of beautiful wistaria-blue colour, deepening at the margins. There is a golden base to the petals. Shown by Mark Fenwick, Esq. (gr. Mr. F. Fustin), Abbotswood, Stow-in-the-Wold.

Tropaeolum azureum.—A slender, twining, greenhouse species from Chili. The leaves are tiny for the genus and the bright blue flowers are also small, although very attractive. Shown by Mr. Clarence Elliott.

For Trial at Wisley.

Mr. P. Murray Thomson, Downshill, Bridge Sollers, Hereford, showed twenty-four distinct seedling double Primroses. In some the doubling was somewhat perfunctory, but the best were very promising, and seven of them were slected for trial at Wisley.

Groups.

On a considerable floor space, Messrs. Sutton and Sons displayed a large number of splendidly grown Nemesias in pots. As is usual with the Reading exhibits, the arrangement showed great skill and taste. Most of the plants were arranged in circles of distinct shades of colour, and we admired especially Scarlet, Crimson, Blue, Rich Orange, Rose Pink and White Gem.

A large group of excellent Hippeastrums was contributed by Mrs. Walter Burns (gr. Mr. G. W. Wright), North Mymms Park, Hertford. These were mostly of a good white, but rose-pinks, crimsons and other shades of colour were equally well represented. Messrs. Stuart Low and Co. associated good Hippeastrums with an interesting variety of other greenhouse plants. Eric Wettern, Esq. (gr. Mr. A. Carter), South Croydon, set up a pleasant group of blue Cinerarias. An exhibit of large-flowered Calceolarias shown by Mr. Alfred Dawkins illustrated a very desirable strain as well as good cultivation. B. Wilkinson, Esq. (gr. Mr. H. Brown), Silverlands, Chertsey, set up a small group of good Schizanthuses. Messrs. J. Cheal and Sons showed the first Dahlias of the year, as cut flowers.

Good exhibits of Roses were displayed by several trade firms. Messrs. B. R. Cant and Sons and Mr. Elisha J. Hicks had many vases of excellent H.T. varieties, while Mr. J. H. Pemberton and Messrs. Frank Cant and Co. grouped very good Polyantha varieties. Their customary exhibits of fresh Carnations were arranged by Messrs. C. Engelmann, Ltd., Messrs. Allwood Bros. and Messrs. Stuart Low and Co.

A large collection of the varieties of Anthurium which have unusually large spathes were displayed by Messrs. Sanders in front of a row of particularly well-flowered plants of Dendrobium thyrsiflorum. The Anthuriums included Magnum Bonum, a good spotted variety; Rothschildianum and its varieties pallens, a pale creamy-white, and amabile, and a pretty rose-coloured variety of Dalliereanum. Mr. Baldwin Pinney again showed Sweet Violets.

Alpines were shown extensively. Messrs. Waterer, Sons and Crisp, displayed good breadths of Polemonium grandiflorum, Meconopsis Baileyii and other seasonable flowers; Messrs. B. Ladhams, Ltd., included sprays of Pyruses and Berberises with border flowers in quantity. Mr. Gavin Jones had an attractive rock garden containing masses of Euphorbia polychroma, dwarf Irises, Saxifrages and Primulas. Rock garden exhibits were also staged by Mr. Geo. E. P. Wood, Messrs. Casburn and Welch, Mr. G. G. Whitelegg, Messrs. C. H. Bloom and Son, Mr. Stephen Sim, Messrs. Baker and the Misses Hopkins.

Messrs. Maxwell and Beale had a bright display of hardy shrubs and border flowers. Messrs. W. H. Rogers and Son introduced colour with Alyssum saxatile var. sulphureum, Gentians and Aubrietias. Mr. Clarence Elliott staged alpines in pans, and included good Androsaces, Gentians and Daphne rupestris (petraea). Messrs. M. Prichard and Son filled a whole table with Azaleas, Brooms and many alpines.

The Sewell Medal, offered for the best six pots or pans of alpines shown by an amateur, induced good competition. The best of the seven exhibits was staged by Mark Fenwick, Esq., Abbots Wood, Stow-in-the-Wold, who had excellent specimens of Lewisia Howellii, Androsace Watkinsii, Daphne rupestris (petraea) var. grandiflora, Haberlea Ferdinandi-Coburgi and Polygala Vayredae. On a floor space, Messrs. L. R. Russell, Ltd. had a pleasing group of Pyruses, Prunuses and dwarf Japanese Azaleas.

Messrs. Patricks staged hardy shrubs, and Mr. G. W. Miller and Mrs. Alan Fremantle showed Polyanthuses and Primroses. Mr. James Douglas had an excellent group of his show and alpine Auriculas.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. J. D. Pearson, Mr. G. W. Leak, Mr. Peter R. Barr, Sir A. Daniel Hall, Mr. W. R. Cranfield, Mrs. Brodie of Brodie, Mr. F. H. Chapman, Mr. F. A. Secrett, Mr. W. Poupart, Mr. Charles H. Curtis, Mr. J. L. Richardson, Mr. G. Monro, Mr. W. F. M. Copeland, Miss E. Willmott and Mr. A. Simmonds, Secretary.

First Class Certificate.

Narcissus Daphne.—This beautiful double-flowered Narcissus received an Award of Merit on May 8, 1917, and on April 22, 1924, it was awarded a First Class Certificate, but for no expressed purpose. This certificate was confirmed at this meeting, it being awarded on account of the variety's value as a market variety for cutting from the open, and for garden decoration purposes. It has all the qualities of a good market Narcissus, the very double flowers being compact and shapely, pure white, and charmingly fragrant, while they are carried well on erect, but not stout, stems. This Narcissus was also recommended for trial at Wisley. Shown by Messrs. Seymour Cobley, Ltd.

Awards of Merit.

Narcissus Recessional.—A grand Poeticus variety, which received an award as a show flower. The flowers are of fine substance, the broad, reflexed and curled segments being pure white, while the flattened crown is primrose-yellow in the centre and rich orange on the frilled margin. This variety was raised and shown by Mr. F. H. Chapman, Rotherside Gardens, Rye.

N. Bridegroom.—A lovely bicolor Barrii Narcissus, with broad, waved perianth segments of fine substance, slightly incurved on the margins and pure, creamy-white in colour; the prominent cup is rich yellow, strikingly edged with orange. This variety was raised by Mrs. Brodie of Brodie, but was shown by Mr. R. F. Calvert.

N. Huon.—A Poeticus variety of outstanding merit, which should prove popular as a market flower. It has irregularly waved, chalky-white, rounded segments, and a small, rich yellow corona edged with reddish-orange. It was raised by the Rev. G. H. Engleheart, and exhibited by Mr. F. A. Secrett.

N. Brimstone.—A Trumpet Daffodil of high quality, its curled perianth segments and long trumpet, frilled and broadly recurved at the mouth, all being of a rich, sulphur-yellow. Raised by the Rev. G. H. Engleheart and shown by W. B. Cranfield, Esq., East Lodge, Enfield Chase.

Groups.

Narcissi were again in evidence at this meeting, and there were a few Tulips. Messrs. Barr and Sons had a grand group of the former, excellently arranged, their best blooms being of such golden Trumpet sorts as Prince of Wales, Gold Sand and Fantin Latour; and a grand seedling Barrii hybrid, No. 348, of outstanding merit, together with Salembo, Gallipoli, Beersheba, Bonfire, Mrs. E. C. Mudge, Silver Gift, and numerous Poetaz varieties.

Mr. Herbert Chapman had a choice collection of Narcissi, but, unfortunately, many of his finest were under numbers only. Among named sorts, Savonarola, Ring-o'-Roses, Rheingold, Water Lily and Palma attracted special attention.

Among the Narcissi set up by Messrs. Cartwright and Goodwin, Ltd., were good specimens of Tenedos, Gallipoli, Dosoris and Robin Redbreast. Mr. F. A. Secrett showed Poetaz Narcissi extensively, his blooms being massed very effectively, while Messrs. R. H. Bath, Ltd., had a small collection which contained several popular sorts, together with a few good seedlings under numbers.

Messrs. G. W. Miller had a small, mixed collection of Narcissi and Tulips, while noteworthy sorts in the mixed group set up by Messrs. D. Stewart and Son were Croesus, Red Beacon and Orange Cup, among Narcissi, and William Pitt, Fra Angelica, Artemis and Arethusa, among Tulips.

Fruit and Vegetable Committee.

Present: Mr. E. A. Bunyard (in the chair), Mr. J. Cheal, Mr. H. S. Rivers, Mr. W. H. Divers, Mr. J. Wilson, Mr. E. A. L. Laxton, Mr. A. Bullock, Mr. R. H. Hall, Mr. A. Poupart, Mr. W. Poupart, Mr. G. F. Tinley, Mr. C. G. A. Nix and Mr. A. N. Rawes, Secretary.

This Committee had no business of any description to conduct.

ROYAL HORTICULTURAL OF IRELAND.

The Spring Show, held by permission of the Earl of Iveagh, in the Covered Court, Earlsfort Terrace, Dublin, on April 17 and 18, proved a pleasant and successful function under ideal weather conditions. Daffodils were fairly plentiful and of high quality, in spite of "London calling," and the consequent absence of the Irish trade growers. Commencing with alpines, the chief winners in nine classes were Mrs. Butler, Priestown, Co. Meath (gr. Mr. J. Manning), who, in the tall order for a table twelve feet by four feet, won outright the Challenge Cup presented by Lady Greer, O.B.E.; Miss Wynne, Tigroney, Co. Wicklow, and Miss Osborne, Drogheda, following. Mrs. Butler won the Cup presented by the late Major Butler for twelve pots or pans of rare alpines, and also the old Irish Silver Cup presented by the Rt. Hon. Andrew Jameson, for the best exhibit in the premier six classes. Mrs. Jameson (gr. Mr. P. Cullen), excelled with twelve pots or pans of alpines, not exceeding six inches in diameter, and also with twelve Saxifrages, distinct; Mrs. Croft, Brackenstown House, Co. Dublin (gr. Mr. G. Naylor), secured the Farrabond Cup, presented by Miss Osborne for the best twelve pots or pans of hardy Primulas, distinct.

Pot plants were unusually well shown, Mrs. McCabe, Trimleston House, Co. Dublin (gr. Mr. T. McGauley), having the best six Primula obconica, with Major Vincent Kelly (gr. Mr. J. McDermott) and C. Wisdom Hely, Esq. (gr. Mr. J. H. Orr), second and third respectively. Six table plants were shown by the Hon. A. E. Guinness (gr. Mr. W. Stevens); Mrs. Bernard (gr. Mrs. J. Dawson), and Madame Fottrell (gr. Mr. W. Taylor), who won in this order. C. Wisdom Hely, Esq., the Hon. Mrs. Chas. Guinness (gr. Mr. J. Corrig), and Mr. W. H. Odlum, were first and second respectively, for six Cyclamens. Deutzias, always well done in Dublin, found C. Wisdom Hely, Esq., first and Major Kelly second; the latter had the best three Mignonettes, with Captain Daly (gr. Mr. J. Murtagh) next. Six pots of grandly grown Freesias secured a first prize for the Hon. Gordon Campbell (gr. Mr. J. Cook), who was without a competitor. Spiraeas secured first and second prizes for C. Wisdom Hely, Esq., and Madame Fottrell. Calceolarias were best shown by Mrs. McCabe, while fine sixes of Schizanthus were staged by W. Hely, Esq., Major Kelly and Mrs. McCabe, who won as placed.

Good lots of two dozen pots or pans of bulbous or tuberous-rooted subjects made a bright display, W. Hely, Esq., winning Messrs. Drummond's first prize, with Mr. Alfred West (gr. Mr. C. T. Coster), second, and Madame Fottrell, third. For six pots of single Tulips, Mrs. McCabe, W. Hely, Esq., and Major Kelly won as placed. Mrs. McCabe's six pots of double Tulips were the best set and of sufficient merit to receive Bishop Plunket's Challenge Cup as the best exhibit in this section; W. Hely, Esq., was second. The best twelve Hyacinths came from Mrs. McCabe, while Messrs. M. Rowan and Co.'s prize for six pots of Hyacinths was won by Major Kelly, with Madame Fottrell second.

In the premier class for Daffodils, thirty varieties, distinct, three stems to a vase, competing for the Lord Ardilaun Perpetual Challenge Cup, and money prizes presented by Messrs. Hogg and Robertson, Dublin, Mrs. Alfred West won for the sixth consecutive year, with her Kilcroney blooms in grand form, but there was little to choose between her flowers and those of Miss Hely-Hutchinson (gr. Mr. J. Shekelton), and these prize-winners, with the Hon. A. E. Guinness, and the Misses Bird (gr. Mr. J. Smith) divided honours in the dozen smaller classes.

Two excellent stands of Roses, of twelve blooms, were shown by Mrs. West, first, and W. Hely, Esq., second. Mrs. West won outright the Challenge Bowl presented by Mrs. Bland, for a dozen bunches of Violets. A fine stand of two dozen vases of hardy flowers found Mrs. Stephenson (gr. Mr. M. Buggle) finally winning Captain Riall's handsome Challenge Cup, Mrs. Jameson having the best twelve vases, with the Misses Bird the next best. Mrs. Stephenson secured Messrs. Watson's (Killiney Nurseries) prize for the best dozen hardy shrubs in flower, smaller classes being filled by those already mentioned. Classes for Primroses in variety were particularly well filled, showing both variety and high quality. In the important class for eighteen vases of bulbous, tuberous, or rhizomatous plants, flowered in the open air, fine displays came from Miss Wynne and Mrs. West.

Fruit was merely represented by a few nice dishes of Apples and one of Pears, the prize-winners being the Hon. Kathleen Lawless, Lyons, Co. Kildare (gr. Mr. W. Hall), Mrs. H. E. Richardson, the Sisters of Charity, Bray (gr. Mr. J. Tully), and Mrs. McCabe. Cucumbers won first prize for The Hon. K. Lawless, with Mrs. McCabe, and the Hon. Gordon Campbell chiefly leading in the single dish classes, the first named having an excellent collection of six vegetables. Other prize-winning collections came from Mrs. McCabe, Miss Darley (gr. Mr. P. Mohan), Miss Cunningham (gr. Mr. J. McLindon), Mrs. Tisdall (gr. Mr. Dougherty), and Mrs. Stapleton (gr. Mr. P. J. Clinch).

Special exhibits did much to enhance the general effect, and they taxed to the utmost limits the space the capacious building afforded. A Gold Medal was voted to Messrs. Wm. Watson and Sons, Ltd., Killiney Nurseries, Co. Dublin, for a fine group of flowering shrubs; Silver Medals being awarded to Messrs. Charles Ramsay and Son, The Royal Nurseries, Dublin, and to Mr. A. L. Speirs, Burtown Nurseries, Co. Kildare, for excellent groups. A Silver Medal was awarded to Miss Gordon, The Curragh, for a table of Primroses in variety, and to Miss Hume, Dublin, for a similar exhibit. Bronze Medals were awarded to Miss Johnston, Bray, and Mrs. Johnston, Kinlough, Co. Leitrim, for attractive tables of hardy flowers; and to Mr. R. C. Cherry for a model garden. A Cultural Certificate was awarded to Mrs. Whyte, Balbriggan, Co. Dublin, for a collection of Mesembryanthemums grown in the open.

GLAMORGAN SPRING FLOWER AND DAFFODIL.

This Society holds its annual show in various places in the county, and this year's venue was Porthcawl, where the show was held in the Pavilion on April 24. The excellent backgrounds, the provision of uniform vases and baskets, together with the high standard of the exhibits, made it a model show, and the Hon. Secretary, Miss Ackland-Allen and her Committee are to be congratulated on the excellence of the arrangements.

The show was well supported by the trade. The Donard Nursery Co. had an imposing group of Narcissi, among their best varieties being Silver Plane, Eskimo, Blizzard, Festive, Tempest, Slieve Donard, Silver Fox and Market Glory. Messrs. Barr and Sons had an equally meritorious exhibit of Narcissi, which included Beersheba, Red Gauntlett, Caedmon, White Nile, Ben Alder, Kantara and many others. Messrs. Robert Veitch and Son exhibited flowering shrubs and alpines. Messrs. Treseder and Son had decorative plants, and Messrs. H. and W. Evans, Llanishen, had a well-arranged group of alpines and shrubs.

The awards in the competitive classes were well contested. Eveline, Lady Byass won the first prize in the class for three blooms each of fifteen varieties of Narcissi, her best varieties being Silver Fox, Macebearer, Croesus, Ibis and Lord Roberts. Mrs. Mackintosh of Mackintosh was a good second, and W. B. Hallowes, Esq., third. For twelve varieties of Narcissi, Eveline, Lady Byass again led, followed by Mrs. Mackintosh of Mackintosh, with Lady Llewellyn third.

The classes for hardy spring flowers other than Daffodils, were well filled with exhibits of very high quality. H. E. David, Esq., had the best six alpines, followed by Lady Llewellyn, who was a good second. For a collection of unforced alpine flowers, fifteen varieties, H. E. David, Esq., again led; second, Major C. T. Edmondes, who included an excellent plant of Androsace helvetica in his exhibit; third, Mrs. D. C. Edmondes; fourth, Mrs. Nichol, For eight varieties of unforced spring flowers, Miss E. Booker was first, Alan Gibbs, Esq., second, and Mrs. Knight third.

For six varieties of hardy Primulas, Eveline, Lady Byass led, followed by Major C. T. Edmondes. For four varieties of Polyanthus, Sir Geoffrey Byass won with excellent plants; second Eveline, Lady Byass; third, Mrs. F. Leigh. For six varieties of Primroses, Eveline, Lady Byass won with a very even lot; second, Sir Geoffrey Byass; third, Mrs. Nichol.

Captain A. Talbot Fletcher had the best collection of flowering shrubs, also the best exhibit of fifteen trusses of Rhododendrons, which included good flowers of R. sperabile, R. niveum, R. Thomsonii and R. caloxanthum. Lady Blythwood won in the class for twelve Anemone blooms; second, Mrs. D. C. Edmondes; third, Mrs. G. Crawshay.

For the best bowl of Daffodils arranged for effect, Miss Ackland Allen led with an excellent arrangement of mixed blooms; Alan Gibbs, Esq., was a close second with a very tasteful bowl of N. poeticus and Prunus Pissardii; third, Miss E. Booker. For a basket of spring flowers arranged for effect, Lady Byass gained first prize; second, Mrs. Knight; third, Miss M. Knight.

In the smaller classes, the leading prize-winners were Eveline Lady Byass, Mrs. Mackintosh of Mackintosh, W. B. Hallowes, Esq., Mrs. Nichol, Mrs. Knight, Mrs. D. C. Edmondes, Miss Dulcie Booker, E. U. David, Esq., Mrs. C. Gilberton and Lady Llewellyn.

NORFOLK AND NORWICH SPRING FLOWER SHOW.

This is the Centenary year of the Norfolk and Norwich Horticultural Society, for it held it first exhibitions in 1829. It was therefore very encouraging to find that the entries upon the occasion of the Spring Flower Show, held on April 18, 19 and 20, exceeded the average of the past five years; indeed, they reached pre-war numbers. Narcissi, owing to the extreme cold weather, were not quite so long in the stem as usual, and it was also noticed that several of those varieties which are usually over before the show date, were at their best this year.

Captain A. Sandys-Winsch, the Secretary, won the Cup for twenty-four varieties of Narcissi and Daffodils, distinct, and as this is his third successive win, the trophy now becomes his own property. This grower is making good strides in the raising of seedlings, and many on his stand under numbers foretold of a demand for them when they are put into commerce.

Colonel H. G. Barclay (gr. Mr. W. C. Barrie), also had an exceptionally good lot of quite up-to-date named sorts. The smaller classes, especially in the Trumpet section, were very attractive, many new kinds being included in them. The prizes for vases, baskets and other decorative classes were all well contested.

In the general cut flower section, Carnations were predominant and Colonel Barclay's blooms were far away the best. In the classes for greenhouse flowers, hardy flowers and hardy outside-grown flowering shrubs, J. A. Christie, Esq., M.P. (gr. Mr. Sam High), Framingham, took three first prizes; among his hardy flowers was a good vase of the brightly coloured Tulipa praestans, while of the flowering shrubs, Magnolia Kobus and Osmanthus Delavayi were outstanding. Violets from Gerald Gurney, Esq. (gr. Mr. F. J. Endersley), Keswick Hall, Norwich, were a meritorious feature.

Pot plants are always a feature of this show, and the splendid collection on a table space eight feet by three feet, exhibited by Mrs. H. J. Copeman (gr. Mr. Mitchell), 111, Newmarket Road, Norwich, was outstanding, containing exceptionally well-grown Calceolarias, Schizanthuses, Primulas, Cinerarias, etc., which were literally sheets of bloom. Mr. Ernest Bond, Newmarket Road, also had a fine group, while he secured special prizes for Cinerarias and other pot plants. Cyclamen were shown extensively, wonderful plants being staged by Colonel H. G. Barclay and Gerald Gurney, Esq., Fruits and vegetables were not a strong feature.

The trade assisted splendidly in making the show of educational worth. Messrs. Daniels Bros., Ltd., had bulbous flowers, Irises and Freesias being their outstanding features. Messrs. Allen had a beautiful display of forced Roses; so also had Messrs. A. Reeves and Co. Messrs. Allwood Bros. and Messrs. C. Engelmann, Ltd., both had effective displays of Carnations, while Messrs. Baker had rock plants in great variety. Messrs. G. W. Miller had hardy flowers and rock plants, and Messrs. R. Winder, Ltd., had a good display of forced shrubs and rock plants. Without doubt, the best display of the trade section was that of Daffodils set up by Messrs. R. H. Bath, Ltd., some really grand blooms being shown. Although not a trade exhibit, special mention may be made of the collection of Roses in pots, staged by an enthusiastic amateur, Dr. G. E. Deacon, of Brundall. It well deserved the Gold Medal awarded.

ANSWERS TO CORRESPONDENTS.

Chrysanthemums.—*G. F. W.* Watering Chrysanthemums immediately they are potted is not to be recommended. Provided the plants are well supplied with water before potting takes place they should receive no water at the roots for several days afterwards, especially if they are placed in cold frames. When water should be applied at the roots will depend very much on outside conditions, but even should the weather prove hot, they should not be watered-in at once as spraying should prove sufficient, but the lights should be left on for a short time, although air should be given during the day.

Grass Tennis Lawn.—*Enquirer.* The Construction of your tennis lawn is perfect, and the depth of soil is sufficient for its maintenance. There may be many reasons which would account for the failure of the finer grasses. A new lawn must be kept under proper control from its inception, and in your case, we are inclined to think that this has not been done. No matter how careful one may be in preparing the bed, weeds generally appear later. The choice of seeds is also of great importance, and if you did not specify a particular mixture, it is probable that your seeds contained a percentage of Rye grass. It is also probable that seeds may have been carried by the wind or by birds from surrounding areas and deposited on your lawns. The best remedy would be to remove the affected parts and re-lay with a good textured turf. If relaying is out of the question, give fortnightly dressings of sulphate of ammonia applied in showery weather, or watered in, at the rate of 1¼lb. to forty square yards. When the grass is sufficiently long, it should be cut closely with a scythe, then mown with a mower; continue these details until you are satisfied the fine grasses are responding to the treatment. Sea sand would not eliminate the trouble.

Grapes Disfigured.—*W. P.* The Grapes sent for examination are healthy and stoning well, but are suffering from an injury known as scalding, which frequently occurs when the berries are about half-grown. In some cases only a few berries here and there may be affected, in others the whole side of a bunch is damaged. The injury is caused by late or imperfect ventilation on bright, sunny mornings while the internal atmosphere is heavily charged with moisture. When airing is done properly the moisture dries slowly, before the sun gains much power, with the result that no scorching takes place. The stoning period is a trying time and sufficient fire-heat should be given to allow of the admittance of a constant supply of fresh air both day and night. Give your Grapes plenty of time during this period, avoid high temperatures and too much atmospheric moisture, and you will not be troubled further with scalding.

Hard Tennis Court.—*W. J. T.* The type of hard tennis court you purpose laying down is not to be recommended. The construction up to a point is excellent, but to spray the surface with the solution mentioned would not give you the desired results. The surface would be injuriously affected by sun and frost and in all probability would become a source of trouble. If you are desirous of having a hard court, we suggest that you obtain information regarding the "Soveran," as this is resilient, porous, permanent and independent of all kinds of weather.

Names of Plants.—*A. C. C.* and *D. S.*—We regret we are unable to name florists' varieties of flowers.—*A. E. Y.* (Red) Haemanthus Katherinae; (white) Tabernaemontana coronaria.—*G. C.* Akebia quinata.—*F. E. S.* 1, Smilax (send when in flower); 2, probably Teucrium Chamaedrys (send when in flower); 3, send when in flower; 4, specimen too small, send when in flower; 5, probably Veronica Teucrium (send when in flower); 6, Anchusa myosotidiflora; 7, Saxifraga cordifolia.—*A. T.* 1, Scilla bifolia; 2, Brodiaea uniflora; 3, Anchusa myosotidiflora.—*G.* Coronilla glauca; 2, Berberis Hookeri var. latifolia; 3, Rhododendron (Azalea) amoenum; 4, Prunus serrulata var. Hisakura; 5, Magnolia Soulangeana; 6, Diervilla florida.—*K. Y.* 1, Asparagus acutifolius; 2, A. falcatus; 3, A. myriocladus (?)—*F. M. B.* 1, Eriobotrya japonica; 2, Photinia serrulata; 3, Raphiolepis japonica.

Peaches and Salt Water.—*A. H. R.* It is very difficult to state what amount of damage would be caused by the salt penetrating into the greenhouse tank, without inspecting the vines and plants under cultivation. Judging from the foliage, the Peaches appear to be suffering from mildew, and the only way to prevent other fruits becoming affected is to spray the trees with a mildew wash; there are several proprietary washes on the market, and they should be used strictly in accordance with the directions given with them.

Preparing Cheshunt Compound.—*F. W. R.* Cheshunt compound cannot be secured ready prepared, but may be made as follows:—Mix two parts, by weight, of powdered copper sulphate with eleven parts of finely crushed, fresh ammonium carbonate, and store it in a tightly-corked glass or stone jar for twenty-four hours. Dissolve one ounce of this dry mixture in a little hot water, and add it to two gallons of cold water. It should be used immediately after being prepared (only sufficient for immediate requirements should be mixed) and should not be put into iron, tin or zinc containers, as it corrodes them and loses its strength. This fungicide originated at the Cheshunt Experimental Station, hence its name.

Postal Instruction on Draughtsmanship.—*J. B.* We do not know anyone who conducts a correspondence course in draughtsmanship, but suggest that you apply to your County Horticultural Instructor, who may, perhaps, know of someone who would help you.

Communications Received.—D. C.—J. M.—G. T.—W. T.—J. P.—D. S.—G. D.—H. F. L.

TRADE NOTES.

At his annual exhibition of bulbous flowers, at Highfield Bulb Farm, in Ayrshire, on April 22, Mr. Montgomery Crawford staged over 200 vases of the newer Daffodils, including two seedlings of his own raising named Highfield Earl and Highfield Prince. They belong to the giant Trumpet section, and the latter is a beautiful, bold flower with a well-formed perianth and large, frilled trumpet. Other prominent varieties were two Leedsii novelties, Elegance and Hey Day; Orange Beauty, Dragoon, Advance Guard, of the King Alfred type; Pride of the Market, Stella Tydd Pratt, Souvenir, Volenti, Fortune, Rubina and the Poetaz Narcissus, Scarlet Gem. Two examples of the double Daffodil Carnation emphasised the high colour obtained by the application of potash. The visitors afterwards inspected the area of land devoted to the culture of Daffodils, Tulips, Hyacinths, Irises and Gladioli, and the proceeds obtained from the sale of flowers were handed over to the local nursing association.

During recent years, the making of miniature gardens, in suitable receptacles, for the embellishment of the house has developed into quite a small industry, and a splendid collection of such gardens was viewed recently at the establishment of April Showers, Ltd., 54, South Molton Street, W.1. In this instance the receptacles are ornamental bowls of real value—Wedgwood, Doulton, Minton, and Denby ware, and the plants with which they are furnished are dwarf Conifers of various sorts, Cacti and other Succulents, Japanese Maples and Euonymus; use is also made of the quaint Corokia Cotoneaster, and the "mature" gardens are disposed of at prices ranging from ten shillings upwards.

THE
Gardeners' Chronicle

No. 2212.—*SATURDAY, MAY* 18, 1929.

CONTENTS.

Alpine garden—
  Androsace sempervivoides 360
  Erigeron leiomerus 360
Arable land, manuring 369
Baeckea frutescens ... 369
Bakewell Flower Show 356
Bog and water garden—
  Gentiana Andrewsii 365
  Gyrostachys stricta 365
  Nymphaeas ... 365
Books, notices of—
  Fertilisers and Manures 364
  Japanese Crabs and Nectarines ... 364
  Seventeenth Century Garden, a ... 364
Bulb garden—
  Crocus Tommasinianus 360
  Fritillaria karadaghensis 360
Bulb industry in Holland 356
"Cactus" Haage, seventieth birthday of ... 357
Chrysanthemum, the noblest Japanese ... 361
Crabs, Flowering, at Kew... 355
Cyprus, botanical tour in 356
Evans, the late Mr. Frank 356
Frost damage, prevention of 356
Indoor plants—
  Hibbertia volubilis 361
  Hybrid Gesneras ... 361
  Thunbergia erecta... 361
Ivy, the destructive ... 355
Lathyrus, some perennial species of ... 366
Market fruit garden ... 368
Paeonia Cambessedesii 369
Primula, the genus ... 367
Public parks and gardens... 369
Rosa gigantea ... 369
Salford Flower Show . 356
Salix lanata var. Stuartii 369
Societies—
  Cardiff Gardeners'... 370
  Parks and Botanic Gardens Superintendents.., ... 370
Soil sterilisation, partial 369
Sweetest-scented flower, the 369
Taylor, Mr. T. W. ... 356
Trees and shrubs—
  Cytisus Ardoinii ... 366
  Davidia, the largest 366
  Prunus persica var. flore sanguineo pleno 366
Tulip, the 363
Vegetable garden—
  A new vegetable ... 368
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 362
Watsonia Ardernei and Ornithogalum lacteum 360
Week's work, the ... 358
Woodland garden—
  Epigaea repens ... 360

ILLUSTRATIONS.

Chrysanthemum Takamikura 361
Gyrostachys stricta 365
Loasa acanthifolia 357
Paeonia Cambessedesii 369
Taylor, Mr. T. W.... 356
Tropaeolum azureum 359
Ward's, Mr. F. Kingdon, tenth expedition in Asia, views of 362, 363

SUPPLEMENT PLATE.
Rock Garden at Rowallane.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 54·6°.

ACTUAL TEMPERATURE—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, May 15, 10 a.m. (Greenwich time). Bar. 29·9. Temp. 54°. Weather Cloudy.

The Destructive Ivy.

SIR MARTIN CONWAY has recently, in the columns of *The Times* (May 11), drawn up a spirited indictment against Ivy as a destroyer of castles and other ancient buildings. We fear that the indictment is well-founded, and recommend that everyone who has ancient buildings of any beauty or interest under his charge should take the necessary steps to repel the invader while there is yet time. Sir Martin's description of the insidious ways of Ivy as a taker and destroyer of castles is so graphic as almost to make our flesh creep. The siege is as subtle and more sustained than that of armies. It mines, it batters and it escalades. Below, at ground level, it thrusts itself between the stones until, as at Allington, near Maidstone—the castle to which Sir Martin's genius has done such wonders of restoration—burrows three feet deep have been found. While mining goes on below, the foe escalades the walls, and having reached the top, sends its roots in between the stones until they are so loosened that they fall. No less interesting are Sir Martin Conway's suggestions that Ivy has developed these vandal habits only in recent years. He has ascertained from old prints there was no Ivy on the walls of Allington Castle before 1800. Yet by 1900, that is, a few years before Sir Martin began the work of restoration, Allington Castle was entirely clad in Ivy, which stood out in some places so much as six feet from the wall. Sir Martin suggests that the besieger approached the battlements under cover of the neighbouring woods. When the Hederaceous army had filled the woods, covering the ground, and had, by exercise on Oaks and other trees, become perfect in the methods of attack, it advanced to the foot of the castle walls. Slowly and surely by mine and by assault, it was wrecking the Castle until Sir Martin, in true knightly fashion, bade it pause. Like all victorious men, Sir Martin finds his conquest easy, all that need be done is to sever the Ivy in two places near the ground level and tear away the intervening fragment. Sir Martin makes the interesting suggestion that it is only in the past century or so that Ivy has learned the trade of siege. As already cited, Allington was Ivy-free a century or so ago. Yet the castle, like a hundred others, had been open to attack ever since the days of Cromwell, if not before. Who turned the wheels of her chariots? Sir Martin conjectures that the castles remained immune from the attack of Ivy because the plant was not yet practised in the arts of attack. Another conjecture is possible. Invisible pioneers preceding the Ivy sappers and miners needs must work long and secretly before the latter may approach and mine. These are the Lichens, plants often so minute as to escape notice, which possess to an extraordinary degree the power of sending deep down into stone and mortar dissolving threads which prepare the way for the entry of the grosser and more brutal Ivy roots. It may well be that this first siege, unnoticed yet decisive, laid the castles of England open to the mass attack by the Ivy, and that in the crumbling state to which Lichens, aided by frost and weather, had reduced the mortar, the Ivy was able to claim victory in the comparatively brief space of one hundred years. Sir Martin may, however, object that we have no right to dismiss Ivy from the role of chief villain, and may point to his observations of the invasion of Allington woods by Ivy. To this we would reply that much woodland became more or less derelict in the nineteenth century, and that this neglect of coppicing and woodland management might be quite sufficient to let in Ivy; in other words, Ivy has not learned new tricks. It always knew them, but only in the neglect of woodland and in the desertion of castles has it found its opportunity of overrunning the one and overthrowing the other.

Rowallane.—We have on several occasions had the pleasure of publishing illustrations of portions of Mr. H. Armytage Moore's fascinating garden at Rowallane, Co. Down, particularly in our issue of September 15, 1928, when the main features of the garden were described. We now present our readers with a Supplement Plate showing part of the extensive rock garden at Rowallane.

Flowering Crabs at Kew.—A number of the ornamental Crabs rank high among the most beautiful of flowering trees of moderate size. Many of them are also handsome and attractive in fruit during the autumn. They are very well represented at Kew, considerable numbers being planted on the lawns and in the shrubbery borders. At the south end of the Temperate House, near the Chinese Pagoda, where the Pyrus family occupies a considerable area in the Rosaceae collection the Crabs and Pears are flowering in unsurpassed profusion, the branches of many of the trees being wreathed in flowers from end to end. The clusters of blossoms vary in the different species, varieties and hybrids, from pure white to rich pink, and on to purplish-red and claret. Not the least attractive are several trees of the common wild Pear, Pyrus communis, one tree in particular with its graceful, semi-pendent habit and wealth of white blossoms suggesting a snow-capped pyramid. On a mound near the Palm House a large group of the Japanese Crab, Pyrus floribunda, with pink-tinted blossoms, and the variety atrosanguinea, with rosy-red flowers, forms a dense tangle of branches, the wide-spreading, small trees or large bushes being covered with blossoms. On either side of the Palm House several large trees of the Siberian Crab, P. baccata, form beautiful specimens, thirty to forty feet high, covered with pink-tinted white blossoms. Several trees of Pyrus purpurea on the lawns are very striking in colour. In a hybrid raised in France between P. floribunda and P. Niedzwetzkyana, the young foliage is red and the flowers glowing purplish-red. Two other hybrids obtaining their remarkably distinct purplish-red colouring from the attractive Russian Crab, P. Niedzwetzkyana, are P. Eleyi and P. aldenhamensis, both of which are valuable additions to the family of flowering Crabs. P. spectabilis flore pleno is a semi-double form of a North China Crab, with an abundance of blossoms, rich rose in bud, and pale pink when fully open. A tree of the variety Kaido is very prominent in the Pyrus collection, the rich rosy-pink blossoms being very attractive. P. Scheideckeri is another hybrid, notably free-flowering, with pale rose blooms that fade to white with age.

Bury Hill Gardens, Dorking.—By kind permission of Colonel R. W. Barclay, the gardens at Bury Hill, Dorking, will be open to the public on May 25 and also on June 8, in aid of the Queen's Institute of District Nursing. The gardens are noted for the fine specimen Conifers they contain; Rhododendrons and Azaleas are also extensively grown.

Kew Guild Annual Meeting and Dinner.—The Annual General Meeting and Dinner of members of the Kew Guild will be held at the Clarendon Restaurant, the Broadway, Hammersmith, W. 6, on May 23. Mr. A. W. Hales, A.L.S., will preside at the Annual Meeting at 6.30 p.m., and an hour later, Mr. J. Coutts, the President for 1929-30, will preside over the dinner.

Chelsea Show.—The general lay-out of the Royal Horticultural Society's Spring Show in the grounds of the Royal Hospital, Chelsea—May 22, 23 and 24—will be similar to that of 1928, with some modifications. The size of the large marquee has been increased by 3,500 square feet, and an additional tent erected to accommodate Mrs. A. Sharman Hoyt's exhibit of Californian desert plants. The educational and scientific section will include exhibits from the R.H.S. Gardens and Laboratory, Wisley; the Royal Botanic Gardens, Kew; the Royal Botanic Garden, Edinburgh; the East Malling Research Station; the Cheshunt Experimental Station; the Rothamsted Experimental Station; and the Seale-Hayne Agricultural College. The catering is in the hands of Messrs. J. Lyons and Co., who will have two large refreshment tents in the Ranelagh Gardens. The National Tulip Society will hold its exhibition on the second day of the show in a marquee near the tents devoted to Roses and Orchids.

British Carnation Society's Outing.—On April 11, about eighty members and friends of the British Carnation Society visited Messrs. C. Englemann's Carnation establishment at Saffron Walden, and spent a very pleasant day inspecting Mr. Englemann's Carnation novelties. The majority of the party travelled down in special restaurant coaches on the 11.50 a.m. train from Liverpool Street Station, the others, about twenty in number, making the journey by road. Among the novelties not yet in commerce, the large-flowered, crimson-coloured Wanda met with general approval, while other choice sorts which were much admired included

Maggie, Dainty, and the American variety, Betty Lou. After inspecting the Carnations, the party visited the sections devoted to Roses and Orchids, both of which are grown extensively at Saffron Walden.

The Bulb Industry in Holland.—Probably no one is more able to write of the bulb industry of Holland than Mr. Ernest H. Krelage, whose long association with the bulb trade, and position as President of the General Dutch Bulb-growers' Society, enables him to write with authority, as he has done in *The Financial and Economic Review* (Amsterdam). This contribution, now reprinted, has been sent us by the author, who tells a very interesting story of the origin of the industry, its organisation and development. It appears that there were about 300 hectares under bulbs in 1850, and now there are over 6,000 hectares, with Haarlem as the centre of the industry. Mr. Krelage deals with improved methods of cultivation and of combating diseases, and shows that Great Britain is Holland's chief customer for bulbs, the exports to this country in 1901 amounting to 4,000,000 kilos, and in 1928 to nearly 16,000,000 kilos; in the latter year the exports to America were nearly 11,000,000 kilos; to Germany, Austria, etc. (German group), 8,000,000; to France and Belgium, etc. (French group), about 1,500,000; and to Sweden and Norway (Swedish group), 6,000,000 kilos. Mr. Krelage has a tilt at America—‘ Restrictive measures do not primarily affect the bulb industry so much as the consumers in the country of destination. The consumers must either pay abnormally high prices for bulbs, or they must be satisfied with the meagre choice of a few other kinds of flowers grown and sold at very high prices in the country prohibiting bulb importation. It is a cause of constant surprise that the consumers in countries which have introduced these restrictive or prohibitive regulations do not oppose them more strongly." Bulbs constitute one of the twelve most important articles of Dutch export, and the export figure for 1928 was 43,000,000 kilos, valued at about the same number of guilders. We admire Mr. Krelage's patriotism, and his "survey" of the Dutch Bulb Industry, but our own patriotism will not permit us to allow that ‘in other countries the culture of bulbs is either impossible or of very limited importance, since only very few kinds of bulbs are grown outside Holland." Darwin Tulip and Daffodil bulbs can be grown as well in this country as in Holland; indeed, certain Dutch growers have settled down in districts where our own growers have long since established successful bulb farms from which, quite frequently, they have exported high grade stocks or special varieties to Holland. Moreover, we take high place as raisers of Daffodils, as evidenced by the crowd of Dutchmen who come over to the London and Birmingham Daffodil Shows, eager to obtain the best new varieties.

The late Mr. Frank Evans.—At a meeting of St. Paul's Church Sunday School teachers at Birkenshaw, it was unanimously decided that a memorial should be placed in the church recording the valued and life-long service of the late Mr. Frank Evans, who for many years was gardener to the Oddy family at Moorlands House, Birkenshaw.

Bakewell Flower Show.—Already the annual exhibition held at Bakewell has achieved fame in and beyond the Midlands. It is held in a delightful district, close to the famous Chatsworth Gardens. The local Committee, with Mr. W. Roland Burke as Chairman, has prepared an attractive schedule of classes for the Show, to be held on August 8. A first prize of £12, with other awards of £7, £4 and £3, respectively, are offered for a collection of hardy perennials arranged on a space of thirty feet by ten feet; £10 is the first prize for a display of Sweet Peas arranged for effect on a space twelve feet by five feet, while £20 is the first prize for a decorated table of fruits, and there is a similarly handsome first prize for a collection of vegetables. Sweet Peas, garden flowers of many kinds, plants, and fruits and vegetables are provided for, and one section of the schedule is arranged to attract cottagers and allotment holders. Exhibits must be staged by 9.30 a.m. at latest, and "no extra time will be allowed under any circumstances." Schedules may be obtained from Mr. A. D. Coates, Hon. Secretary, Estate Office, Chatsworth, Bakewell, or from Mr. J. G. Weston, of Chatsworth Gardens, who is the Show Manager for the sections for trade displays and open classes.

Mr. T. W. Taylor.—A Gloucestershire man by birth, Mr. T. W. Taylor commenced his gardening career under his father at the Manor House, Ham, Surrey. At the end of two years he left to go as improver in the gardens at Offchurch Bury, Leamington, where he gained further experience both under glass and outside. His next move was to Barcote, Faringdon, a place which at that time was renowned for its rich collection of Orchids and stove and greenhouse plants. Leaving Barcote at the end of two years, he spent a short period in the Chelsea nursery of Messrs. James Veitch and Sons, and from there he obtained a position as first journeyman at Heythrop Park, Chipping Norton. After serving two years in the plant houses, he was promoted to fruit foreman, a position in which he had entire charge of a large range of fruit houses, as well as the hardy fruits. He remained at Heythrop for four years, when, anxious to gain further experience, he turned his attention to public gardening, and entered the Royal Botanic Gardens, Kew, in May, 1902. After serving one year as a student gardener in the Tropical Department, he was promoted to the position of sub-foreman of the Temperate House pits, but in less than a year he was back in the Tropical Department as sub-foreman of the propagating section. In May, 1906, he was promoted to foreman of the Temperate House, a position he held until September, 1914, when he was transferred to the entire charge of the Tropical Department. In 1922 the foremen at Kew were raised to the status of Assistant Curators. Last year, Mr. Taylor made an extensive tour in Ceylon, Malaya and Java for the purpose of studying tropical vegetation growing under natural conditions, and to visit the Botanic Gardens in those countries. On May 20, Mr. W. J. Bean ends his long and able career at Kew, and on the following day Mr. T. W. Taylor succeeds Mr. Bean as Curator of the world-famous Kew Gardens.

MR. T. W. TAYLOR.

Botanical Tour in Cyprus.—A very interesting account of a botanical tour he recently made in Cyprus was given to the Linnean Society by Dr. G. Claridge Druce, F.R.S., on April 18. Dr. Druce pointed out that the botanical history of Cyprus is a long one. Theophrastus mentions some of its products, Dioscorides alludes to its Origanum oil, and Drummond, in 1754, was the first to record a definite endemic species, Quercus alnifolia; a second, Onosma fruticosum, was found by Labillardière in February, 1787; Putoria and the Cedrus had also thus early been noted. Its true scientific exploration was begun by Sibthorp in 1787, accompanied by his artist, Bauer, the discoverer of Pinguicula crystallina. Three of his original paintings of the island were shown—Monte Croce, 80 (Stavrovuni); the Monastery, 81; and Ipsora, 82; they were five weeks on the island, and noted 313 species, many of them being new to science. A few scattered notes were made between this date and 1831, when Aucher Eloy added many plants. The new species were published chiefly by Boissier. T. Kotschy visited the island three times between 1840 and 1862 and brought up the number of species to 1050, of which about 90 are cultivated, but there are at least 800 definite species in his list. Gaudrey, Hooker, Hanbury, Haussknecht, J. Ball, Sir Samuel Butler, Sintenis and Rigo, W. Barbey, T. Pichler, E. Deschamps, G. E. Post, E. Hartman, and others, have added to the knowledge of the flora. Mr. A. Lascelles (now Sir Alfred), when he was Judge there, and his sister, Miss Lascelles, made considerable collections in 1900–2; these, with Miss Samson's plants are at Kew. The list contains about forty-six additional species. The author climbed Chionistra, Hag Hilarion, Pentadactylos (for some distance), and searched the high ground at Platres, Pissuri, Prodromo, Kikkou, Agros, etc.; also the salt-marshes at Larnaca and Limassol, but the season was not forward enough for either the mountains or the marshes; also the area around Paphos, Morphou, Myrtru Lapithos, Kyrenia, Salamis, Nikosia, Kythraea, Famagusta, etc. He succeeded in verifying Sibthorp's records (hitherto not refound) of Cheilanthes fragrans—in two localities—Camelina, and Linaria Cymbalaria, which is really L. longipes. He verified Kotschy's unlocalised record of Silene Behen and Miss Samson's of Carduus pycnocephalus. One of the most interesting additions was that of Lamprothamnium papulosum, J. Groves, a great extension in the north-east.

Prevention of Frost Damage.—A New Zealand reader of *The Gardeners' Chronicle* has kindly sent us an extract from the *Auckland Weekly News*, which tells of a method adopted by an Otiake fruit-grower to prevent damage to his trees by frosts. The extract reads as follows:—"For years the orchardists of the South Island have suffered heavy losses through the destructive influence of frosts. Various remedies have been tried, but with only moderate success. Mr. Harris, an orchardist at Otiake, near Oamaru, says he has discovered a method of fighting the frosts which will be both economical and effective. It consists of two blocks of Oamaru white stone (Bath stone) excavated in the centre. In these excavations inflammable liquid is poured. This penetrates the stone, and when a match is applied the stone rapidly becomes red-hot, and remains so for a period of almost four hours. The stones are placed beneath fruit trees before being heated, and are covered with kerosene tins."

Popularising the Chrysanthemum.—The Belgian Chrysanthemum Society arranged a public lecture on the growing of Chrysanthemums at the Brussels Botanic Garden, on May 5, at 11 a.m., and in order to secure a large attendance, rooted cuttings were distributed to those present. The lecture was given by M. Fr. Roekens, the Secretary of the Society.

Salford Flower Show.—Judging by the schedule recently received, the Salford Flower Show—an annual event, established in 1882, and organised by the Salford Parks Entertainments Sub-Committee—is this year, as in previous years, likely to prove a very popular horticultural event; it is to be held on September 3, 4 and 5, at Buile Hill Park, Salford. There are 291 classes for horticultural subjects—flowers, fruits and vegetables, and window plants; also cottage garden and window-box competitions, together with special sections for poultry and pigeons. The prize-list is a very attractive one, and many fine trophies are offered, especially in the open classes for groups of various flowering plants—herbaceous, Dahlias, Roses, Gladioli, Orchids, and Pansies and Violas.

Juvenile Gardeners at Guildford.—The Guildford Gardeners' Association encourages "the gardening habit" among the school children of the town, and in previous years has distributed plants which the more successful growers exhibit at the summer show. If we remember rightly, Antirrhinums and Violas have been distributed in other years; the youngsters are to try their skill with Fuchsias this year, and 1,558 plants were applied for.

North-east Coast Exhibition Flower Shows.—In our reference to the North-east Coast Exhibition (p. 341), we stated that applications for schedules for the flower show could be obtained from Miss A. M. Kelly. We understand, however, that although the whole of the gardens have been and are under the direction of Miss Kelly, the Flower Shows come under a pecial committee, with Mr. Herbert Shaw as Chairman, and Mr. J. Anderson and Mr. G. W. Paterson as Hon. Secretaries, to whom communications should be addressed at 20, Grainger Street, Newcastle-on-Tyne. The show dates are July 4 to 6, and September 5 to 7.

The late Sir Wm. Thiselton Dyer.—A lengthy, intimate and interesting account of the life and work of the late Sir William Thiselton Dyer, together with a characteristic portrait, appears in the current issue of the *Kew Bulletin* (No. 3, 1929). In the same issue, Messrs. Smith and Hubbard continue "Notes on African Grasses," and refer to an interesting experiment made with Puccinella angusta, a species that appears likely to be of great service for sheep grazing in South Africa, particularly on land saturated with saline salts. Mr. T. A. Sprague discusses the name of the Sugar Maple, and contends that Acer saccharum must stand and not A. saccharinum.

Manchester Parks Departments' Journal.—The fifth issue of the *Journal* of the Manchester Parks and Cemeteries Departments' Society has reached us, and although it is of interest chiefly to those who are, or have been, employed under Mr. W. W. Pettigrew, it is, nevertheless, of wide interest, particularly to those engaged in public parks. Mr. M. Morgan discusses and emphasises the "Importance of Detail," while Mr. G. Haig writes pleasingly on "The Value of Botanical Knowledge" to "the keen student of horticulture." Some of the features of Fog Lane Park are described by Mr. R. T. Pierce, and those of Wythenshawe Park by Mr. L. E. Morgan, who was recently appointed Superintendent of the Stockport parks. The activities of the Society are reported and a syllabus of lectures to be given during the 1929-30 session is included. Last year the members visited Edinburgh; this year they propose to visit Windsor Castle Gardens, Frogmore, Eton, Cumberland Lodge, Windsor Park and Windsor Castle; they will leave Manchester at midnight on August 23, by saloon train, breakfast on the journey, and arrive at Windsor at 6 a.m. Mr. G. Cule is the Secretary of the Society. A few copies of the *Journal* are available to non-members, and may be obtained post free for 1s. 2d. from the Hon. Treasurer, Mr. J. G. Slater, Guildhall Chambers, Lloyd Street, Albert Square, Manchester.

Seventieth Birthday of "Cactus" Haage.—On April 8 this year, Ferdinand Haage, the proprietor of the Erfurt Cactus-growing business conducted as F. A. Haage, junior, celebrated his seventieth birthday. The firm is over one hundred years old, but when the present proprietor took it over, it was of small dimensions, and it was he who worked it up to its present world-wide importance—an importance difficult to realise in this country, where Cacti are not very popular. In Germany, however, where the majority of town dwellers have no gardens at all, and are obliged to meet their taste for gardening by growing plants in pots indoors, the cultivation of Cacti has attained to a quite remarkable popularity. In these circumstances, Ferdinand Haage has become known not merely as a specialist in, and supplier of, Cacti, but as the guide, philosopher and friend of all Cactus growers, from the big trade customer down to the humblest beginner, consequently he is known as "Cactus" Haage and "Uncle Ferdinand" all over Germany. Still strong and vigorous, he may fairly look forward to many years of active life and continued enjoyment of the popularity and affection he has done so much to deserve.

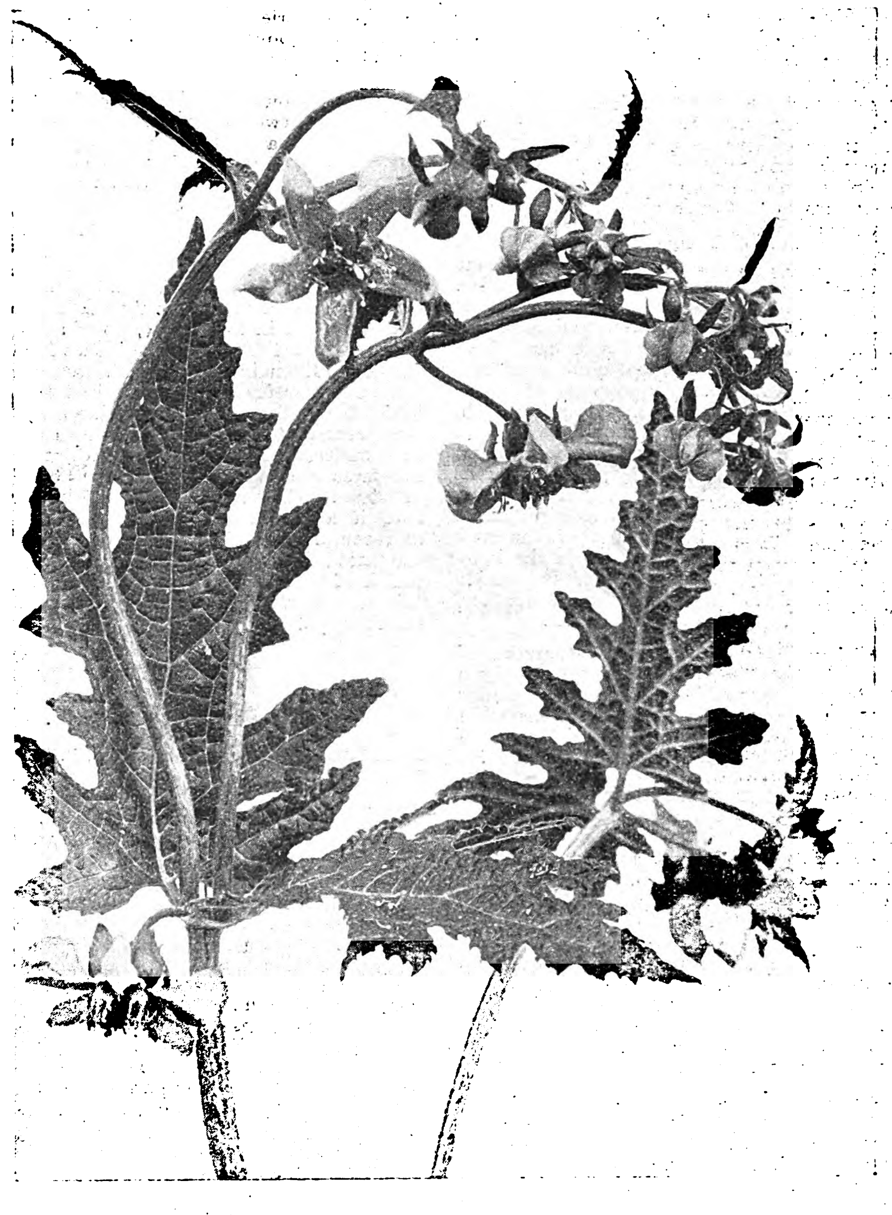

FIG. 178.—LOASA ACANTHIFOLIA.

R.H.S. Award of Merit, May 7. Flowers orange. Shown by Mr. Clarence Elliott. (see p. 352).

Appointments for the Ensuing Week.—Wednesday, May 22: Royal Horticultural Society's Chelsea Show (three days); Gardeners' Club Annual Dinner, St. Ermin's Hotel, Westminster; Newcastle and District Horticultural Society's meeting; Bath and West of England Show. Thursday, May 23: Kew Guild Annual Meeting and Dinner, Clarendon Restaurant, Hammersmith. Saturday, May 25: Leeds Paxton Society's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Horticultural Society's Show at Chiswick.*—Nothing could be more brilliant than the exhibition of flowers and fruit at Chiswick last Saturday. It was a beautiful day, and four or five thousand visitors would have been present had not the presence of the Queen at Woolwich carried off all except 1,764. To those who did attend, the exhibitors offered a real treat. Such Roses and such Azaleas have rarely been seen; and when it is stated that those two classes nearly filled the largest tent on the ground, it will be understood that that part of the exhibition must have been a terrestrial paradise. The Orchids were abundant and excellent, notwithstanding the absence of Mrs. Lawrence and Mr. Rucker; and the greenhouse plants, especially those from Lady Antrobus, were models of cultivation. Let us hope that huge unwieldy plants will be seen no more; for they cost so much for carriage, and are in all respects so inferior to beautiful specimens like those of Mr. Green, that exhibitors will surely now discover that it is entirely contrary to their interest to persevere in their production. The new arrangements for rewarding fruit have evidently found favour among gardeners; for no May show in our remembrance has produced so great an abundance of such remarkable excellence. Novelties among plants were few. The most striking was a new salmon coloured Indian Rhododendron, in the way of javanicum, produced by Messrs. Veitch, and a very fine thing. The next was the woolly-stemmed Cypripedium villosum, from Borneo, from the same great importers; and third in merit was a species of Hederoma called by the ambitious title of Genetyllis tulipifera, of which a detailed account appears in another column. *Gard. Chron., May* 20, 1854.

Publications Received.—*Nature in Wood and Forest*, by W. Percival Westell; pp. 119, illustrated. The Sheldon Press, Northumberland Avenue, W.C.2; price 2s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Brazilian Miltonias.—Many of these Miltonias, such as M. spectabilis and its varieties, together with many supposed natural hybrids—M. Bluntii, M. Lamarckeana, M. Peetersiana and others—which generally produce their beautifully-coloured flowers during the late summer and autumn months, are now commencing to grow, and new roots will develop along with the young growths, when any necessary repotting should be done. As these Orchids are mostly surface-rooting subjects, and prefer a wide root-run rather than a great depth of compost, shallow, well-drained pans should be used, while a suitable rooting medium consists of three parts Osmunda fibre and one part chopped Sphagnum-moss, well mixed together. This should be pressed moderately firmly about the roots, and water should be afforded carefully. These Orchids thrive when grown suspended in a light position in the intermediate house and shaded from strong, direct sunshine; they require cultural treatment similar to that afforded Cattleyas. Ample supplies of water will be needed when the plants are in full growth, while plenty of light and air should be allowed to reach the growths as they are nearing completion, so as to secure well-ripened growths which are essential for the production of flowers of good quality. Thrips are often troublesome and quickly damage the foliage of the new growths, and these should be kept in check by spraying with a weak solution of insecticide at regular intervals, and in favourable weather, during the spring and summer months.

Shading.—With the increased strength of sunshine it may become necessary to apply a very thin coating of Hall's distemper, or similar shading, on the glass of the cool houses, in conjunction with the blinds, especially where blinds of the light lath-roller type are used.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Chief Assistant Lecturer, Reading University Horticultural College.

The Mealy Plum Aphis.—The life history of the Mealy Plum Aphis (Hyalopterus pruni) is not very clear; at least, it is not definitely known what occurs between September and June. It is assumed that the winter and early spring stage is spent on riverside reeds and grasses, but so far, no eggs have been found. This aphis appears during June and July as winged females. Young are produced alive in great numbers on the Plum leaves which, for some extraordinary reason, do not curl, nor does the presence of the aphides interfere with the normal growth of the young shoot. Much grey meal is produced on the bodies of these insects, and this falls on to the leaves immediately below them. This meal, with a large amount of honey-dew secreted, makes the fruits and leaves filthy. This pest has a particular liking for the varieties Victoria and Pond's Seedling, possibly on account of their large, fleshy leaves. Remedial measures should be applied in the earlier stages, as the mealy covering is difficult to penetrate when the insects are present in large numbers.

The Plum-leaf-curling Aphis.—Another aphis of a similar nature, and equally destructive, is the Plum leaf-curling aphis (Aphis pruni). The life history of this is, in most respects, the same as that of the Cherry aphis. The aphides fly away to some unknown plants, probably grasses, and return in autumn, giving rise to sexual forms which produce the eggs. This pest attacks Plums and Damsons, and occasionally Apples and Peaches. The same remedial measures as for Cherry aphis—soft soap and nicotine—should be applied before the leaves commence to curl.

Apricots.—Trees on walls have set fruits well. They should be afforded much the same treatment as Peaches, except that only the superfluous and badly placed shoots should be removed, and the remainder stopped at the fourth or fifth leaf to form fruit spurs. Where extension of growth is desired, or bare places require furnishing, a selection of the best placed shoots may be laid in and made secure. The fruits should be thinned gradually, so that they are finally from four to eight inches apart, according to the variety. Thus, Oullins Early Peach, Moorpark, Shipley's and Powell's Late, all produce large fruits and will require the maximum amount of space, while Breda, Kaisha and Early Moorpark produce fruits medium to small in size, and will require only half the maximum distance. Frequent soakings with clear water, followed by applications of liquid manure and a mulching, will keep the trees in good health and vigorous during the summer months. The trees should be inspected frequently, and any shoots not required for extension should be stopped. Subsequent growths should be stopped at the first or second leaf.

Transplanted Fruit Trees and Moisture.—The rainfall for the first four months of the year has been abnormally low, if not a record. In January we registered only 1·23 inch, in February ·73, in March ·01, and in April 1·03, making a total of only three inches for the four months. Even in 1921, which was considered a record year for drought, we had 4·35 inches in the first four months. There is a grave danger that trees that were planted late in the season may suffer from this prolonged drought unless measures are taken to counteract the lack of moisture. The surface soil should be broken up and, if a mulch of manure was not applied as recommended at the time of planting, give the trees a thorough soaking and apply a good mulch of decayed manure, several inches in thickness, to well beyond the outward extent of the root system.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Bedding Plants.—Commence to harden-off all bedding plants that are sufficiently advanced, by removing them from the pits to cold frames. So many tender plants are severely checked during this process that it takes them a considerable time to recover. The weather is often treacherous during the first half of May, therefore every precaution should be taken to guard against too low a temperature by covering the frames with protecting material during the night. As the plants become used to their new quarters, they should be gradually inured to outside conditions, air being admitted freely on every possible occasion. Pentstemons, Calceolarias, and other half-hardy plants that were rooted in frames, may now be planted in their flowering quarters if the ground is vacant. Lobelia cardinalis and the many new Lobelia hybrids that have been introduced during recent years may, if they have been wintered in a cold frame, also be planted out. These plants revel in rich, moist soil, and when preparing positions for them apply a very generous dressing of leaf-mould to the soil. Plants of early-flowering Chrysanthemums that were rooted in early spring and grown on in cold frames, may be planted out, provided they have been hardened off well. They are equally useful for filling beds or borders, or for supplying cut flowers during autumn. Allow sufficient room between the plants for development, according to the variety. For the bushy sorts, two feet will be none too much, and eighteen inches for those of more erect habit. Incidentally, these Chrysanthemums may be grown in nursery beds during the summer and transferred to the flower garden as they come into bloom. Chrysanthemums so treated show few signs of distress provided they are well watered, and each plant is cut round with a spade a few days before being transplanted.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Plums under Glass—The Plum trees which were started with the Cherries will now be behind the latter in fruit development. If the fruits are swelling freely, they should be well thinned with Grape scissors, retaining, preferably, those situated where there are most leaves. The earliest trees will have barely passed the stoning stage, therefore mulching, feeding and syringing must be continued for some time. Only soft water should be used, and then sufficient to wet the fruits completely, as if the fruits are only partly wetted their appearance will be like that of badly finished Grapes. Partial wetting or light spraying often spots the fruits, while liberal syringing leaves the " bloom" intact. Aphis should be kept in check by occasional fumigations.

Melons.—Although the weather has not been severe, incessant firing has been absolutely necessary during the very cold nights, especially if fermenting material has not played an important part in the maintenance of bottom-heat. In dry pits the syringe may, and should, be used freely, but the conditions most favourable to the growth of early Melons is a moist atmosphere secured from the fermentation of litter and leaves. If the bottom heat ranges from 80° to 85°, and the female flowers begin to open, syringing may practically cease, but sufficient fire heat should be employed to maintain a free circulation of air until the fruits are set. When the fruits have attained the size of hen's eggs, the final earthing up should be performed, early enough for the roots to permeate the fresh soil before the plants begin to feel the strain of cropping, and the amount of compost afforded should not be excessive. Where directions given previously have been carried out, feeding from this stage forward should be practised on a liberal scale, and the more frequent the change of diet, the better will be the progress of the plants, and the finer the fruits. Temperature by night should range at about 70°, and that by day from 80° to 85°, rising, through sun-heat, and as a result of a thorough syringing with tepid water, to 90° to 95° after closing. Culture after the fruits are thinned is very simple; preserve every premier leaf from injury, remove all useless spray, and pinch lateral growths at the first joint in advance of the fruit. Successional plants, now in various stages of growth, may be treated as advised in former calendars, except that the amount of heat may be increased considerably, especially on bright, sunny days, when air may be admitted. The minimum temperature need never fall below 70°; sudden changes of temperature must be avoided, and water which is colder than the atmosphere of the house should never be used indiscriminately. When in free growth the plants may be afforded liberal supplies of tepid water, but liquid stimulants should be reserved until the fruits commence swelling; top-dressings of strong loam, previously warmed, should be given as the roots appear on the soil surface.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Ixoras.—The Ixoras rank among the most beautiful of all stove plants, but, alas, they are rarely met with in these days. The conditions necessary to secure healthy and well-flowered specimens are, without doubt, a comparatively high temperature and abundance of atmospheric moisture during the growing season. The compost should be of an open nature, consisting of good fibrous loam and peat, with sharp sand and broken charcoal added. Pot them moderately firm, and afford light shading during the growing season, for if the young growths are exposed to brilliant sunshine they will suffer somewhat, although during the dull months of the year light is essential to their well being. Young plants that are being grown on may be potted at any time it is found necessary to do so. Propagation of Ixoras is readily effected by cuttings, taken so soon as large enough and inserted within the rim of a small pot, singly or otherwise, and placed under a bell-glass on a temperate hot-bed. Under such conditions, and provided they are shaded from sunshine, the cuttings will root quickly and, if subsequently given careful treatment, will form good plants the following year.

Hippeastrums.—As these plants pass out of flower they should receive every encouragement to produce strong, healthy foliage, for much will depend on the treatment meted out to them during the next few months as to their floral display next season. Plants that have been forced into flower in strong heat tend to produce weak foliage which, unless supported, is liable to fall over and break, with the result that good, stout bulbs are not obtained. The plants should be fed liberally with liquid manure and grown in a temperature ranging from 60° to 70°, but after the foliage has fully developed they may be transferred to a house having a lower temperature, and placed in a sunny position in order that the bulbs may be well ripened. Continue to afford water until the foliage shows signs that a rest is needed.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER, Knowle Gardens, Dunster, Somerset.

New Zealand Spinach.—Seeds of this Spinach, which withstands dry conditions well, may now be sown. Sow the seeds in shallow drills eighteen inches apart, and when the seedlings are large enough to handle thin them to one-and-a-half foot to two feet apart for, when mature, they cover a large surface of ground, and will afford plenty of fresh leaves well on into the autumn.

Brussels Sprouts.—Plants from seeds sown early, and which were pricked out into boxes, will now be ready for transferring to their permanent quarters. The ground, which should have been prepared some time ago, should be levelled and made fairly firm, and the plants placed two-and-a-half feet apart in drills three feet apart. The drills should be six inches deep, and when removing the plants from the boxes, do so with a trowel, taking care to secure a good ball of soil with each. After planting, make the soil firm about each plant and water well. As the roots obtain a hold of the soil, loosen the surface soil with a Dutch hoe, at the same time filling in the planting drills.

Potatos.—If the planting of main-crop Potatos has not yet been finished, no time should be lost in doing so. Earlier Potatos should be earthed up so soon as their growths are sufficiently advanced.

Lettuces.—Another batch of Lettuce seedlings should be planted out. These may be planted along Celery ridges, for they will be ready for cutting by the time the soil is required for filling in the Celery trenches.

Celery.—The seedlings that were pricked out some time ago, and which are intended to produce an early supply, should now be ready for hardening off. So soon as hardened they may be planted out. Main-crop seedlings may be pricked out into frames and afforded close conditions for a few days, together with shade, after which, air may be admitted gradually in increasing quantity.

Tomatos.—So soon as the outdoor Tomato plants have been hardened off they may be planted out in suitable situations, such as in front of glasshouses, where there is always plenty of shelter and heat; stake each plant, and as growth advances, secure it to the stake.

Cardoons.—Seeds of Cardoons may be sown either in pots or in the trenches where they are to be grown. If sown in pots, growth will be a few weeks earlier than if the seeds are sown in the trenches in the open.

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq., Rosemont, Monkton, Ayrshire.

Vegetables.—Thin Turnip seedlings so soon as they can be handled easily, and sow small batches at intervals for succession, as the roots soon get out of condition. Stump-rooted Carrots should also be sown at frequent intervals, thinly enough to dispense with the necessity of heavy thinning and consequent root disturbance. French and Runner Beans may now be sown in quantity, giving them the best possible soil and aspect. Broad Beans, to supply a late crop, may be sown in good, heavy, well-manured soil, if possible.

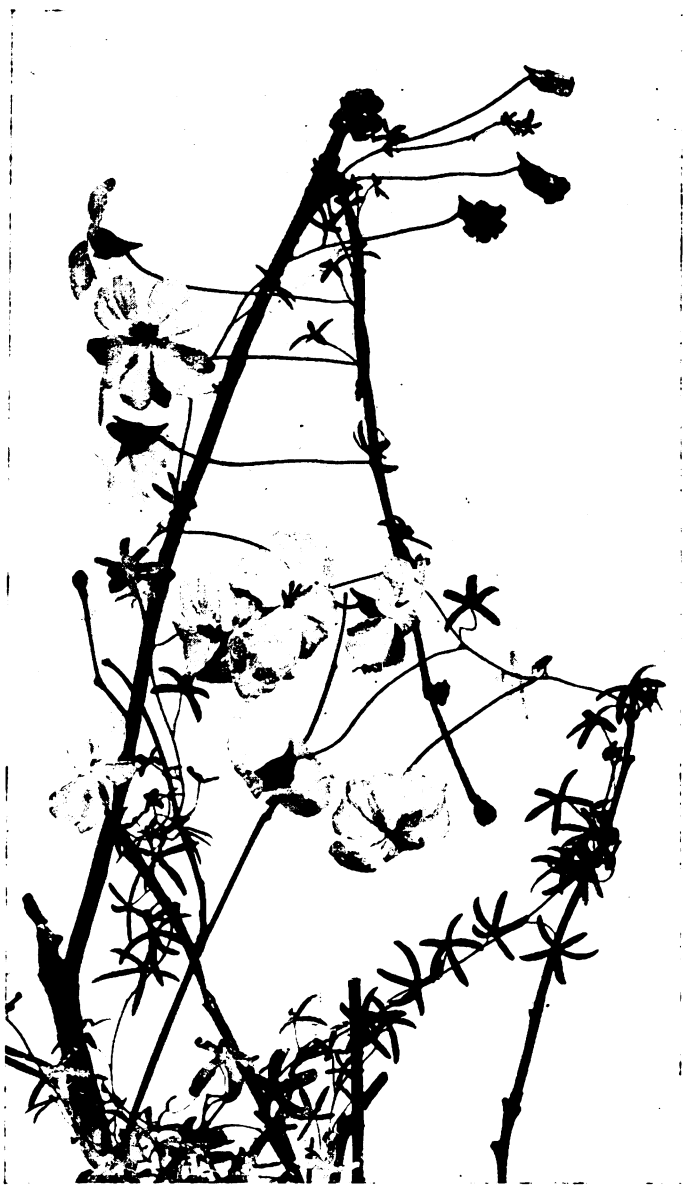

FIG. 179.—TROPAEOLUM AZUREUM.

R.H.S. Award of Merit, May 7. Flowers blue. Shown by Mr. Clarence Elliott. (See p. 352).

Chrysanthemums.—Late-flowering plants in pots should receive their second stopping if second crowns are required. As they break, decide upon the number of blooms required—twelve to fourteen—and remove all undersized shoots, retaining the strongest. If the soil for the final potting can be prepared now and allowed to sweeten until early June, much good will result. Most growers have their own favourite compost, but I venture to suggest one of loam, three parts; partly decayed manure, one part; partly decayed leaf-mould, one part; rough sand, one part; fine bone-meal, a quarter-part; charcoal and wood-ashes, one part; and soot, a five-inch potful to each barrow-load of compost. Only rough, fibrous loam should be used. Mix the compost well and place it in a heap in a rain-proof place, and turn it in a week or ten days' time.

Biennials and Perennials.—Wallflowers, Myosotis, Cheiranthus Allionii, Sweet Williams and other spring bedding plants, should be sown forthwith, either in boxes of light soil, or in a prepared bed in the open. Many perennials, such as Geums, Lychnis and Coreopsis, are prone to deteriorate in a few years, and fresh stocks should be raised annually if the best results are to be obtained. Polyanthuses, Aquilegias, Pyrethrums, etc., which were raised in heat and pricked off in boxes, should now have more room to develop, either by being planted in their permanent quarters, or in frames for autumn planting, as, if allowed to become starved and overcrowded, good results with them cannot be hoped for.

Greenhouse Annuals.—Cinerarias for early flowering, Primula obconica and P. malacoides, etc., should now be sown. Pans or pots of a light compost of about equal parts loam, leaf-mould and sand (a little less loam is, perhaps, desirable) should be prepared and the seeds sown thinly, watering them by placing the receptacles in a vessel of water so that the water may percolate up through the compost without flooding the surface. Place the receptacles in a closely-shaded frame until germination takes place, after which the seedlings should receive plenty of light, in a frame or house where the direct rays of the sun will not strike them.

WATSONIA ARDERNEI AND ORNITHOGALUM LACTEUM.

About ten years ago a kind friend of the Royal Horticultural Society sent from the Cape a case containing about two thousand corms of the beautiful white Watsonia Ardernei, and they were planted when they reached Wisley, in April, in the moist soil of the Azalea garden. There they grew and flowered among the Azaleas after the latter were past and before the coming of the autumn tints that make that part of the garden, with its frame of Austrian Pines, berried shrubs and Bamboos, so beautiful in September and October. Then, following the advice given in nearly all the books, the corms were lifted, dried off, and stored exactly like Gladioli, to be planted next spring. That winter nearly eighty per cent. of the corms died. It was clear that if this way of dealing with the plants were followed there would soon be none left, and we should be none the worse off if we left them to take their chance of the winter out-of-doors.

They were again planted, and again flowered, but they were left in, and every plant came through the winter safely, and most of them flowered. There they have been ever since. The clumps have increased, and every year their graceful spikes of clear white flowers appear in due season. The winter of 1927-8 was a very trying one, but although they were badly damaged in the foliage, they grew away well. The past winter has been worse, with long spells of frost down to –1°F. on the ground, yet again these plants of W. Ardernei are thrusting up the green leaves among the brown of last season.

Mr. Grove (p. 293) rightly states that Watsonia Ardernei generally dies out quickly, but these plants have not borne out the common experience. They have, with the unorthodox treatment, flourished and increased, and apparently they have the conditions that suit them. They have moist, deep, peaty soil, sometimes under water for days in winter, and never dry far down; undisturbed possession of the ground; and such shelter only from frost as the dead leaves of the past year give. It may be that here is the secret of growing the beautiful Watsonia Ardernei in this country.

Another South African bulb, Ornithogalum lacteum, the flowers of which are probably more familiar than the plants, for they are frequently sent from the Cape, with the native Cape name of "Chinkerinchee," packed in card boxes, and remain fresh in water for weeks after they are unpacked, has come through two or three winters without serious damage, and is now growing well. This, however, is in a totally different situation under a west wall, where it has all the afternoon sun, and where it is, on the whole, very dry and well-drained. The plants have flowered there without disturbance two summers in succession, and would probably prove amenable in other gardens in places where Tigridias will survive. *Fred. J. Chittenden, R.H.S. Gardens, Wisley.*

BULB GARDEN.

FRITILLARIA KARADAGHENSIS.

With reference to Fritillaria karadaghensis (see *The Gardeners' Chronicle* of March 23, p. 221, Fig. 107), this species has been grown outside in Mr. A. C. Bartholomew's garden, at Reading, and although it did not flower, I think it has given proof of its hardiness. It is planted five inches to six inches deep, facing west, backed by a Portugal Laurel. Of the five bulbs potted, all flowered, with three flowers on each stem, and some of these are setting seeds.

Of other bulbs that came from Mr. Egger in October, 1928, and grown outside in the same position, there are Iris Bakeriana, Iris paradoxa var. violacea (flowered), I. reticulata var. Krelagei, Tulipa violacea var. pallida (flowered), and T. polychroma. Another Fritillaria from the same source flowered in a cold greenhouse; this was F. gibbosa, and the flower was flat and open, while another quite good bloom appeared at the end of February. *C. Cook, Reading.*

CROCUS TOMMASINIANUS.

This indestructible and beautiful Crocus painted the ground at Eastertide with wide-open cups of lavender, which wholly hide the slender, grass-like leaves from sight. In spite of its Eastern origin, the recent frosts have done no damage whatever to the corms, as, secure in their netted tunics, they defy cold and wet alike; one has only to plant a few corms of this Crocus in order to produce a good display, and then the plants increase steadily from year to year until the ground is full of small corms, each of which contributes its quota to the carpet of flowers. Sometimes the outer surface of the perianth is white in colour, although generally it is of a paler shade of the lavender-blue inside. The perianth tube is decorated with a white beard which varies from a distinct fringe in some cases to a merely papillose condition of the throat.

Any soil seems to suit this Crocus, although, of course, an open and well-drained position should be chosen in case stagnant conditions should prevail and possibly rot the corms. *Reginald Kaye, The Birch, Sharpthorne, Sussex.*

WOODLAND GARDEN.

EPIGAEA REPENS.

Many are the plants which, although common and free-growing in their own native countries, yet continually defy the gardener who would cultivate them, and such an one is the lovely Epigaea repens, which must prove a good "selling line" for those nurserymen who are fortunate enough to possess good stocks of it, for many are they who would woo this lovely, fragrant-flowered creeper, but few are successful with it. So that Epigaea repens, common enough in many parts of North America and known to many generations of English gardeners, continues to remain a rarity and a much-prized treasure, for seldom, indeed, are really good specimens of it met with in English gardens.

Why this is so is beyond explanation, although its resentment to disturbance would appear to have much to do with it, and it is not often that one can obtain really well-established specimens with which to make the attempt. And yet, in its native country, E. repens, known variously as the American Ground Ivy, Trailing Arbutus, Ground Laurel, Mayflower, etc.—a proof of its free distribution and popularity—flourishes abundantly, while its foliage is described as being valued for its medicinal properties. The late Reginald Farrer (*The English Rock Garden*) described how that, in America, E. repens is "often gathered up in its mats, and stored 'down cellar' in trays of leaf-mould so as to be brought up at Christmas to delight the house with its creeping masses of rather ample oval roughish green leaves, amid which in clusters shine the waxy stars of pearl-pale blossom, exhaling a steady breath of the most delicious fragrance."—A charming picture of it, but what a contrast to the poor, struggling specimens in which we take such pride, gloating over and admiring the few clusters of bloom, still, fortunately, deliciously fragrant, which may reward the many heart-burns for it.

E. repens, the best known species of the genus, and a member of the Natural Order Ericaceae, is one of the choicest of trailing, evergreen plants, and its pale, pink-tinted, waxy flowers, produced in small clusters during May, are among the most fragrant, their odour attracting attention to them from a considerable distance. It is naturally a shade-loving and woodland plant, being found often beneath Pine trees in America, so that a position in the woodland garden, beneath Coniferous trees or evergreen shrubs—Rhododendrons, Pieris or Camellias—would appear most likely to prove congenial to it, for it delights in fairly dense shade.

Another important factor is that it should be planted very firmly, while the chances of success with it will be increased if the soil contains plenty of coarse, sharp sand, and is of a peaty nature, supplemented with a good proportion of leaf-mould. Having been provided with these conditions, E. repens should be left to its own devices, undisturbed and, if possible, forgotten, until its fragrance of blossom calls attention to its presence.

In matters of propagation, E. repens presents the same difficulties, for seeds, when obtainable, do not germinate freely, and it heartily resents root-disturbance, therefore division is impracticable. Propagation by cuttings, rooted in sand in late summer, although difficult, gives the best results, provided careful after-treatment is afforded. *M. W.*

ALPINE GARDEN.

ANDROSACE SEMPERVIVOIDES.

In past years, when alpine plant growers were few, the cultivation of an Androsace with success was regarded as a feat of cultural skill, and he who succeeded for the first time in the successful cultivation of one or two of these gems was considered to have achieved the task of passing the *pons asinorum*, and generally prided himself upon it. Now, however, there are many successful cultivators of these exquisite plants, but it is well to learn of the most amenable species and what they require.

One of the most charming of all is now in bloom here; it has been established for two years in a moraine surfaced with whinstone chips with a full south-west exposure. It is growing in the lower part of the moraine, where a little old lime-rubble has been mixed with the staple compost of loam, sand and chips. Here A. sempervivoides is evidently happy and is very attractive, its leaves harmonising delightfully with the grey of the chips and the heads of rosy-pink flowers.

A. sempervivoides is widely distributed in the north-west Himalayas. It increases with freedom and forms lovely rosettes of oval, overlapping green leaves, while the rosy flowers are borne on stems from three to four inches high. *S. Arnott.*

ERIGERON LEIOMERUS.

The name Erigeron is usually associated, in the mind, with free-growing herbs, several of which, especially the newer, amply-flowered hybrids, are indispensable for the herbaceous border, the dwarfer kinds being useful for providing massed colour effects on the rock garden. But there is one species, namely, Erigeron leiomerus, which is not a rampant grower, nor is it by any means among the easiest of plants to cultivate successfully, and yet it possesses such charm and daintiness as to rank among the choicest of rock garden plants.

E. leiomerus hails from America—from the Alps of Utah, etc.—and in this country requires moraine treatment or, at least, an especially favoured position in perfectly drained, gritty, and light, loamy soil; in any case, it is happiest and most likely to survive our wet winters—my plant in the open has only just managed to scrape through the last, and is looking rather sorry for itself at present—if provided with a good layer of clean granite chips as a surface covering to the soil around it. It is an admirable subject for culture in the alpine house, where it is safest, provided it is treated with the care it deserves, and it also responds well to culture in a stone trough in association with other alpine pygmies.

For E. leiomerus is of dwarf stature, but forms a close little tuft of spoon-shaped, bright green leaves, and from among these, in late May and June, arise numerous, slender stems three or, at the most, four inches high, each bearing a lovely, solitary, Daisy-flower of pale but clear, lavender-blue colouring, singularly attractive and produced, for so small and aristocratic a plant, with considerable freedom. *Kent.*

THE NOBLEST JAPANESE CHRYSANTHEMUM.

The raising and appreciation of new varieties of the Chrysanthemum have not ceased for more than a thousand years in our empire, where the sixteen-petalled Chrysanthemum is the crest of our royal family. C. morifolium and C. indicum, the original species of Chrysanthemum, are also growing naturally in middle and southern Japan, consequently some people consider the Chrysanthemum was also developed from the wild species in Japan—as it was in China. We consider that "The Chrysanthemum is the most unworldly of flowers," but beauty and loveliness are only appreciated in association with nobleness, so we have many "noble" sorts in new and old varieties. Among them Takamikura (The Imperial Throne) is regarded as the noblest Japanese Chrysanthemum yet raised (Fig. 180). This has been very rarely seen in flower; it was raised by Mr. I. Moyama, a well-known expert, in 1926, but only last year was it distributed and then only in limited numbers. The colour is white, tinted with soft green. The long, outer florets are somewhat drooping and curled at the tips. The incurved inner florets are raised up towards the centre in a not too dense cluster. When intensively cultivated it is not rare that the flower exceeds two feet in diameter; indeed, Takamikura is the largest flower as well as the noblest. This variety has very long stems, growing to a height of seven to eight feet. It is a gross feeder, but over-feeding causes an excessively raised centre, and the noble appearance is then lost. Although so long-stemmed, the leaves are retained until flowering time. Japanese Chrysanthemum growers exercise great care to retain the lower leaves, as they do not appreciate the flower only, but the whole plant, whether it is potted or planted in a bed.

By-the-way, the preparation of soil and the cultural methods followed in Japan are almost as varied as the number of Chrysanthemum enthusiasts. *K. Yashiroda, Tonosho-Kyoku, Kagawaken, Japan.*

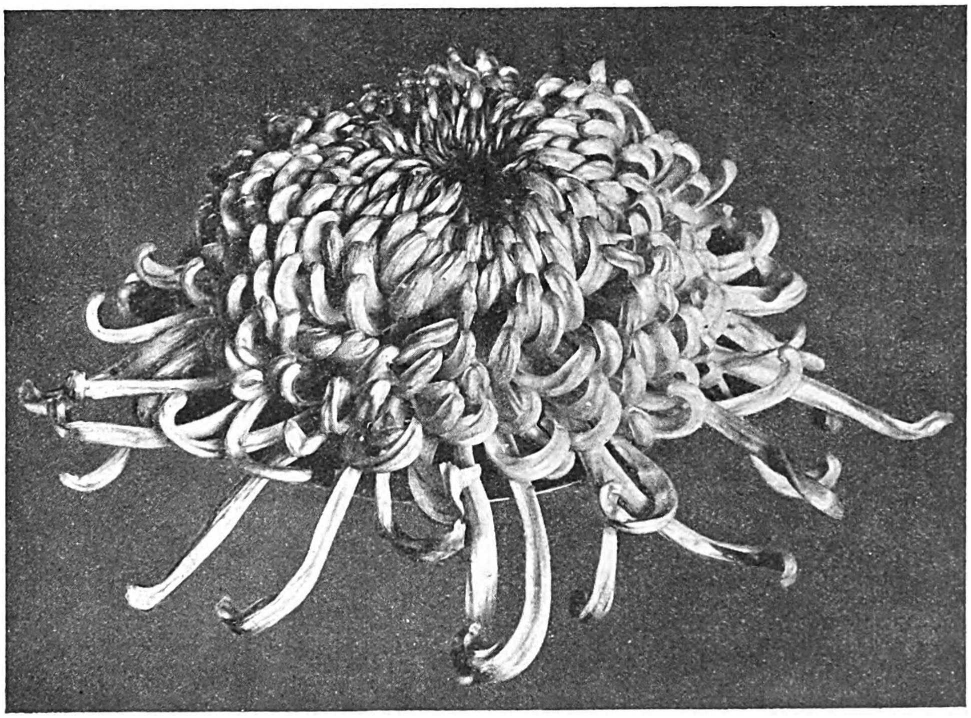

FIG. 180.—CHRYSANTHEMUM TAKAMIKURA.

INDOOR PLANTS.

HYBRID GESNERAS.

The ornamental foliage and numerous showy-coloured flowers of the Gesneras in cultivation to-day render them among the most useful subjects for house decoration during the autumn and winter months. By starting them into growth in successional batches they may be had in flower over a period of several months, and they are particularly pleasing during late autumn when house decoration usually means a continuity of Chrysanthemums.

Assuming that one is in possession of a number of the catkin-like corms, they may be started into growth now, in boxes of leaf-mould and sand, in a stove temperature, after the manner of Gloxinias and Begonias. Water sparingly until growth commences, and when the first pair of leaves is well developed, pot them into three-inch pots, either one in a pot for flowering in five or six-inch pots, or three in a pot to form large specimens for flowering in seven or even eight-inch pots—the latter method is not advisable unless distinct colours can be kept together in one pot.

The compost for this potting should consist of equal parts fibrous loam, peat and leaf-mould, adding a small quantity of dried, sifted cow manure, and a liberal quantity of silver sand. Ensure good drainage, pot lightly, and place the plants on a shelf in a warm house, shading them from bright sunshine. Maintain a moist atmosphere, but do not permit overhead syringing, as the plants dislike water upon their leaves. So soon as well-rooted, they should be shifted into five-inch pots, and if larger specimens are required, they may be repotted later on, using a compost similar to that for the previous potting, but of a rougher nature and adding a small quantity of Clay's fertiliser. Keep them growing in a warm house, and support neatly with stakes so soon as necessary, keeping the plants free from draughts, as these cause mildew, which soon spoils the attractiveness of the foliage. Give plenty of water when the pots are well filled with roots, when applications of weak liquid manure may also be given with beneficial results.

As the flowers begin to develop the plants may be inured gradually to cooler conditions and, if kept free from draughts and shaded from bright sunshine, will remain in flower for a considerable time; if the main spike is removed after flowering the plants will break and flower again later. The plants should be carefully tended after flowering, for it is then that the corms for the following season have to be matured; in order to effect this, continue watering with weak liquid manure until the foliage begins to die down, after which gradually dry them off.

During the resting period the corms may be stored in their pots in a cool, dry place, but they must not be baked by placing them under a staging close to the hot-water pipes. Should the pots be required for other subjects, the corms may be shaken from the soil—a delicate operation, as they are liable to injury if handled carelessly—and stored in dry sand.

Gesneras may be raised from seeds sown in January and grown in the same way as for seedling Gloxinias or Streptocarpus. They may be increased by division of the corms and also by cuttings, which root readily in heat; if the latter method is adopted, it is preferable to take the cuttings early in the season in order to give the plants sufficient time to form corms, otherwise the plants die outright when they go to rest. Gesneras are sometimes attacked by mealy bug and white fly; the former may be kept in check with methylated spirit applied with a camel-hair brush to the affected parts, and the latter by fumigation with "G" grade cyanogas. Incidentally, this fumigant deserves to be better known, for it is a safe and sure means of combating white fly, and is non-injurious to plant life if the directions are carried out correctly, while the cost per 1,000 cubic feet of house is about one-fifth that of the cost of the liquid compounds usually employed. *A. J. Turner.*

THUNBERGIA ERECTA.

A charming decorative plant for embellishing the stages in an intermediate house is Thunbergia erecta, a native of tropical West Africa. It is of rather dense, shrubby growth, and eventually attains a height of three or four feet, but smaller specimens in five- or six-inch pots bloom freely and are well adapted for the purpose mentioned.

The opposite leaves are rich dark green above and paler beneath. They are shortly petiolate, and pointedly ovate in shape, with slightly sinuately-toothed margins. Throughout the summer and autumn the Gloxinia-like flowers are produced freely. The funnel-shaped corolla possesses a curved tube, which is white without and bright yellow within, and so contrasts effectively with the rich purple of the five sub-rotund, obcordate lobes of the limb. The corolla tube is between two and three inches in length, and the diameter across the limb from one-and-a-half inch to two inches.

Cuttings root readily in the spring, and, if potted on in an open, peaty compost, soon make plants of good size, and bloom freely in their second year. T. erecta is not at all exacting in its requirements, but revels in a moist atmosphere, and requires syringing freely during hot weather. During the winter time it is well to reduce the water supply somewhat, and place the plants in a temperature of 55°F., as at this time they rest partially. Lightly prune any straggly growths in the early spring, repot, and introduce the plants to a warmer temperature just as active growth commences. *T. H. Everett, New York.*

HIBBERTIA VOLUBILIS.

This handsome member of the Natural Order Dilleniaceae, is a native plant of New South Wales. It is the largest-flowered member of the genus, which comprises some seventy species. The terminally-borne blooms are a very pure yellow in colour and from two to two-and-a-half inches in diameter. They are slightly foetid and appear during April. As its specific name implies, H. volubilis is a climbing plant.

This subject grows well in a compost of peat and loam, or in peat or loam separately. It is well, however, to remember that any suggestion of bad drainage is fatal to its well-being, therefore a generous amount of sand should be added to the compost to ensure porosity. Propagation may be effected by means of cuttings.

H. volubilis is by no means a hardy plant, but if planted out in a corridor or allowed to clothe a pillar in a cool greenhouse it will thrive and prove very attractive with its glossy, dark green foliage and bright yellow flowers. *F. H. Wright, University Botanic Garden, Cambridge.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XX.—SOME TREE RHODODENDRONS.

TREE Rhododendrons are characteristic of the middle temperate forest, where the mountains are high enough, in regions of persistent rather than heavy summer rainfall, and considerable winter snowfall. First met with as scattered trees, of no great height, and with leaves of average size, in the lower temperate rain forest (where R. arboreum, R. Mackenzianum and others of the 'Stamineum' series, such as K.W. 8,056, and many of the 'Irroratum' series, such as the royal purple-flowered K.W. 8,044, are found), they become dominant once the Conifer forest is reached. Between 9,000 and 11,000 feet, big-leafed, tree Rhododendrons may form quite fifty per cent. of the forest, although from a distance one might never suspect it, as they are far overtopped and smothered by the Coniferous trees which form the bulk of the remainder; these Conifers are usually Tsuga species or, perhaps, Pinus excelsa, Juniperus species and finally Abies, with Larix Griffithii scattered through. Beneath this Coniferous canopy there are also a certain number of deciduous trees mixed with the Rhododendrons, such as species of Acer and Betula, Magnolia rostrata and M. mollicomata (also M. globosa, when it it a tree and not a shrub), and a few Araliaceae, including Gamblea ciliata. At still greater heights, even before the forest has given place to scrub, where only Abies and Larix can withstand the drought, the Rhododendrons dwindle in size again—although they increase in numbers—and assume a bush-like habit.

On those mountain ranges where the climate, or, at any rate, the air, is drier, with a long winter and a short summer, are found tree species of the 'Lacteum' series, such as R. Beesianum; and although these may grow socially and have good-sized leaves, they fall rather outside the scope of this chapter, being found at altitudes over 11,000 feet. Typical Rhododendron forest, as developed in the mountains of Indo-Himalaya, from Sikkim in the west to the Salween river in the east, is composed chiefly of species belonging to the 'Grande' and 'Falconeri' series, with scattered trees of the 'Thomsoni' and other series. The species have these points in common:—Trees from forty feet to sixty feet high, with massive but short trunks, more or less erect, but not infrequently growing out from the steep flank of the mountain at an angle approaching the horizontal before curving into the vertical; the horizontal portion then being, as a rule, flattened from side to side; the trunk soon diffusing into a number of gnarled and angular limbs, which fork abruptly again and again into a spreading crown of zig-zag branches; leaves big and thick, sometimes very big, woolly, or with a skein of closely-woven hair below, like a glistening skin (glabrous and smaller in the 'Thomsoni' species); and fat, globular trusses of closely-packed flowers, purple, yellow, or white, usually blotched at the base but not speckled, which open in early spring—April to May. In a good year, the temperate rain forest, when viewed from above, is a never-to-be-forgotten sight, thousands of light-coloured buoys tossing and riding on a dark green sea, which the breezes ruffle into ever-changing hues of silver and russet. This, indeed, is something which the introduction of any number of plants into Britain or anywhere else, can never hope to reproduce; on the other hand, we can grow individual specimens as the plant collector always hopes to discover them, but, in fact, never does.

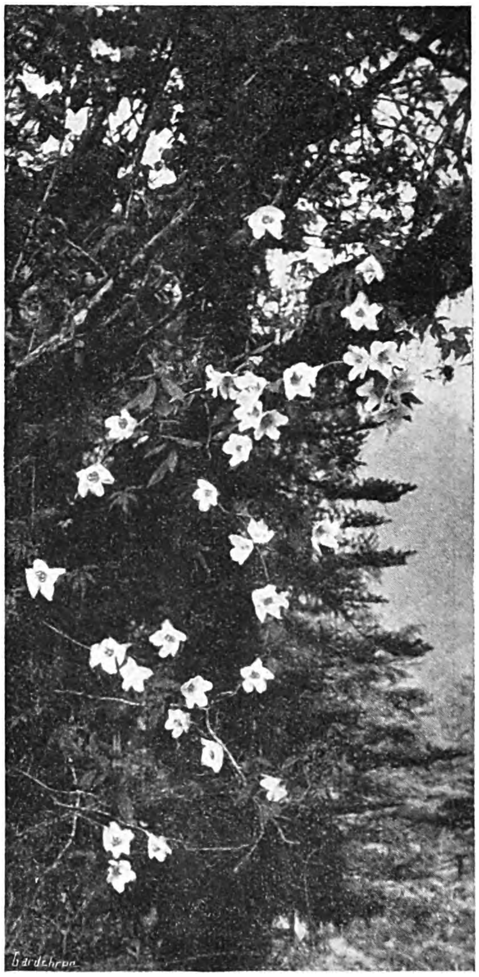

FIG. 181.—AN EPIPHYTIC RHODODENDRON OF THE 'EDGEWORTHII' SERIES.

So much in general. The forests of the Delei valley were uncommonly rich in tree Rhododendrons, both big- and medium-leafed, so I will now pass on to the particular.

The first 'Grande' was met with early in April; probably I did not go high enough to get within effective range, for although I saw a few scattered trees, they had neither flowered the previous year nor intended to flower this. Not until we reached Camp III, where the mountains rise to loftier heights, did we meet with real Rhododendron forest. On April 24, at 8,000 to 9,000 feet, we found R. sino-grande (Fig. 183) coming into bloom. Even when out of flower it is easily distinguished from allied species by the size of its leaves, which have a bright yellow midrib; in flower, the size of the trusses distinguishes it. The flowers are a rather weak yellow, with a small and uncertain purple flash at the base, and for colour are not nearly so striking as those of some other species; nevertheless, it is a noble tree, and an inspiring sight in full bloom. It is worth noting that young plants which have not yet reached the flowering stage have larger leaves than mature trees. R. sino-grande has a fairly wide range, and in my experience, shows little variation from the Tsango gorge at the eastern end of the Himalayas in the west, to the Salween valley in the east. Between these extremes I have collected it at several places, notably in the Seinghku valley (at the headwaters of the Irrawaddy) in 1926, and in the Delei valley; curiously enough, I had never seen it in good bloom until 1928.

It was in early May that we first saw forests of mixed tree Rhododendrons (Fig. 182), by which time we had reached Camp IV, 5,000 feet, and were enclosed by mountains white with snow. On May 5, I ascended a ridge to 9,000 feet, and at last found myself in the Rhododendron forest; three 'Grande' species were in flower. R. sino-grande, the first species met with, was passing over, but at its top limit was still in fair bloom. Another species had a cream-coloured, eight-lobed corolla, much like that of R. sino-grande, but smaller, and with only eighteen instead of twenty-four stamens; the most pronounced difference, however, was the much smaller leaf with rufous fur below—a loose covering, not woven into a tight skin. Indeed, this species recalled R. Falconeri rather than R. grande, and probably belongs to that section (K.W. 8,163). Just bursting into boisterous yellow blossom was a third species. It had leaves silver-plated beneath like those of R. sino-grande, but much smaller, long and narrow; the flowers, however, were a smart, bright yellow—the imperial yellow of the late Manchu dynasty—deeper than anything I have seen in 'Grande' Rhododendrons previously.

At the end of May, we went into our first high camp, actually in the Rhododendron forest; by this time the flowers were over. Our immediate roof was formed of the leaves of R. sino-grande, and of the rufous-haired plant; the rain made a fine noise on this all-weather hood, and for half-an-hour after it started not a drop fell in our open-air summer-house, an advantage cancelled by the fact that for half-an-hour after it had ceased to rain outside, water dripped heavily into our parlour!

Four more species were prominent in the forest here. One, with rather small leaves, buff below and with outstanding primary veins (K.W. 8,194) calls for little notice, as I did not see it in flower. It was almost the first 'Grande' met with on this particular ridge (sharing the ground with R. sino-grande) and, indeed, never seems to go very high; certainly not beyond the Tsuga belt. The next, K.W. 8,251, is more of a puzzle. I just missed it in flower, but from fallen corollas ascertained that the colour is pinkish-purple. Such a colour is, I believe, unknown in the 'Grande' series, and, indeed, the five-lobed corolla and ten stamens did not point to that relationship. On the other hand, the large trusses, and the big leaves with loose, woolly, white fur beneath, turning grey with age (and thereby recalling those of R. Macabeanum) emphatically point to 'Grande.' Anyhow, a fine tree, and a pretty puzzle; I must have missed something unusual, not seeing it in flower. Between 10,000 feet, where it first appeared, practically at the base line of Abies, and 11,000 feet, where it began to get scarce, it often formed an effective portion of the Rhododendron forest, growing both socially and scattered.

The last three species with which it is convenient to deal here, take us to groups other

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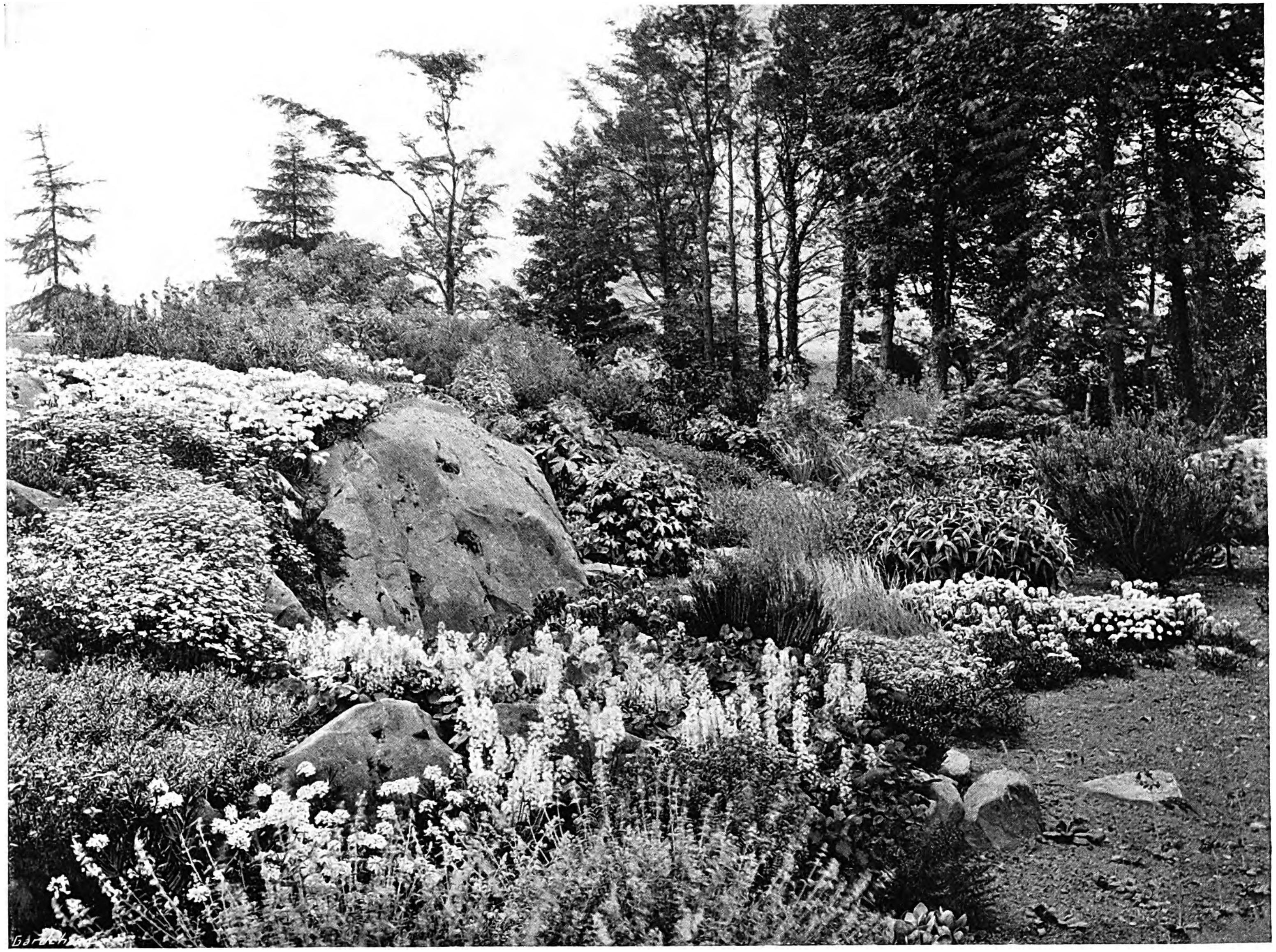
* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; March 2, 16 and 30; April 13, and 27, 1929.

Supplement to THE GARDENERS' CHRONICLE.



THE ROCK GARDENS AT ROWALLANE.

than 'Grande' and 'Falconeri.' The first, a big tree brand of 'Thomsoni,' bore fat fists of purple flowers, and comparatively small leaves. It was chiefly remarkable, however, for its glassy-smooth trunk, on which even the ever-ready moss failed to lodge—except when the trunk stuck out horizontally like a pipe from the mountain face. This was surprising in a forest almost every tree of which was muffled and swaddled in moss to such an extent that often its identity was difficult to determine beneath the disguise! Even the 'Grande' trees were moss-bound to some extent, although they supported few epiphytic shrubs, a circumstance not difficult to account for; epiphytes live on skyscrapers in order to reach the light, which the overlapping leaf rosettes of the Rhododendrons effectively block out. The absence of moss from the 'Thomsoni' trees is probably a mere mechanical result, due to a smooth, slippery surface and few niches; the 'Grande' trees, with their rougher bark, support a certain amount, but the absence of suitable landing grounds on the even trunk accounts for its moderation.

Next, K.W. 8,300 is a smallish tree, scattered among 'Grandes,' but not of them. The leaves, which resemble those of R. ponticum at first sight, have a thin, rust-brown skin beneath, suggestive of the 'Lacteum' series, and the glabrous fruits support that view; but the flowers were long over even at the end of May, and the tree 'Lacteums' do not usually flower so early as all that. Lastly, the common but beautiful pink-white 'Barbatum' K.W. 8,164, dominated the narrow parts of the ridge and occurred scattered throughout the lower parts of the Abies forest; it also is a small tree. *F. Kingdon Ward.*

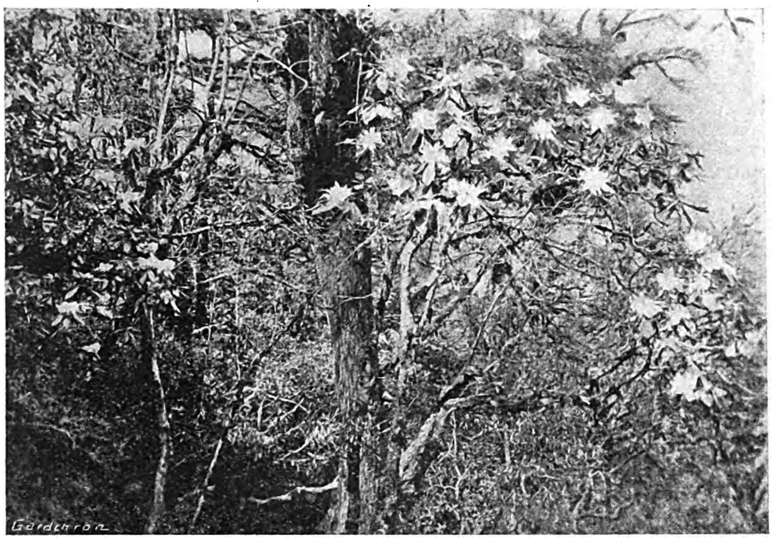


FIG. 182.—THE TANGLE OF THE RHODODENDRON FOREST.

THE TULIP.*

The Tulip is not an English or even a European flower. In Europe there is possibly one wild species, T. australis, the nodding-headed, yellow "Tulip of Bologna" of the early herbalists, which is possibly wild in the Apennines, in Sicily, in the Cevennes, and some localities in Spain and Portugal. But the species which is sometimes credited with being wild in England, T. silvestris is, undoubtedly, a garden stray, which both here and on the Continent is only found on land that has at some time been cultivated. The garden Tulip first became known to western Europe through Busbequius, an ambassador of the Emperor to the Sultan, who met with them on his way to Constantinople in 1554. Busbequius sent home bulbs and seeds, but there were other sources of importation, and the first record we have is that Gesner saw one flowering in 1559 in the garden of Councillor Herwart, in Augsburg. As a flower, it leapt into instant fame, and as it was a time of great activity in gardening, by the close of the century the Tulip was widely distributed in Vienna and Germany, in Holland and Flanders, and in England, France and northern Italy.

But when the Tulip arrived from the East it was already a made flower, that is, it possessed a number of varieties which, however, in the general run of their characteristics, do not differ at all from the garden Tulips of to-day. The original Tulip had narrow petals which came to a point; many of the existing garden Tulips still have that character, but the western gardeners have selected, by preference, Tulips with short, rounded, broad petals, forming a cup. It is still unknown how this eastern garden Tulip arose. None of the species that have since been discovered in western or central Asia, the real home of the genus, can be appealed to with confidence as the source of the garden Tulip. All the varieties of the garden Tulip are fully fertile with one another, which is some argument against a hybrid origin. Again, among the garden Tulips are both white and yellow grounds, yet no species akin to the garden Tulip possesses a white ground. One might still suppose that the white ground had arisen in cultivation as a "mutation," were it not for the fact that the white ground behaves as a simple "dominant" to the "recessive" yellow ground, and dominant mutations are very rare. For the present we can do little more than speculate about the origin of the garden Tulip; we shall probably get some light from breeding experiments with Tulip species, but these are slow because it takes six years before a Tulip reaches the flowering stage from seed-sowing. The origin is certainly remote in time, the locality probably Persia.

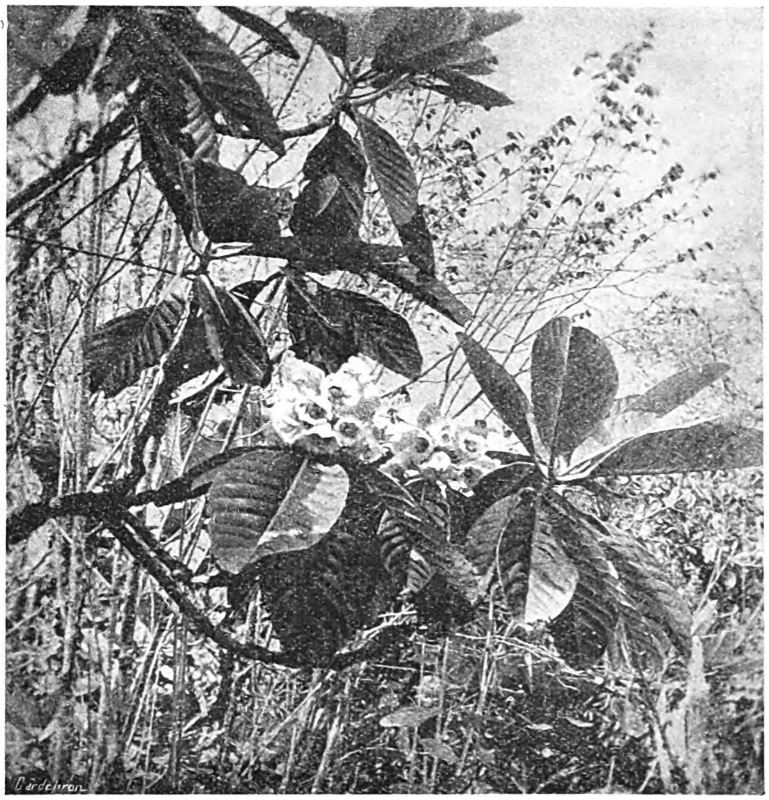


FIG. 183.—RHODODENDRON SINO-GRANDE IN FLOWER AT 8,000 FEET ALT.

From its earliest arrival in Europe the garden Tulip showed one peculiarity exhibited by no other flower. The seedlings are self-coloured when they first bloom,—pink, crimson or purple, or brown, orange or scarlet. Suddenly, in any year, some of them may become variegated and show crimson or purple streaks upon a white ground or brown streaks upon a yellow ground. This change is called "breaking," and is permanent in the sense that the offsets from the bulb that "broke" are also broken. Yet it is not reproduced in seedlings from the broken bulbs and is therefore not a case of "sporting" in the usual horticultural sense of the word. The broken flowers have always been most prized by the fanciers; formerly, the early, unvariegated forms were only kept as stepping stones to the broken varieties, and were known as "breeders." Nowadays it is the breeders that are chiefly grown for decorative purposes.

"Breaking" remained unexplained until recently, when certain analogies led to the suggestion that it might be due to a "virus," one of the ultra-microscopic, filter-passing agents such as cause mosaics and variegation in Abutilon, Potato and Tomato. Last year, Miss D. M. Cayley, at the John Innes Horticultural Institution, succeeded in grafting unbroken Tulips on broken ones, whereby they were induced to break to the extent of over thirty per cent. Similarly, introducing plugs of "broken" tissue into unbroken bulbs induced breaking, so that the evidence is strongly in favour of "breaking" being induced by the transmission of a virus. The question is, then, of the agent effecting the transmission in nature. With many plants some species of aphis carries the virus, and at least four species of aphis are found on the Tulip at some stage or other. A year or two back, Dr. E. J. Collins, of the John Innes Institution, got evidence in favour of transmission by aphis, but not conclusive because the controls were not free from infection. More extensive trials are being conducted by Mr. McKenny Hughes with each of the four species of aphis, in one case with a positive result so far as one season's test can be trusted. It is, perhaps, significant that the aphis inculpated, Myzus persicae, is the chief transmitter of Potato mosaic. While the story is still incomplete, the hypothesis that "breaking" is due to a transmissible virus is at least reasonably probable.

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* Abstract of a Lecture delivered by Sir Daniel Hall, Director of John Innes Horticultural Institute, at the Royal Institution of Great Britain, on May 3. The lecture was illustrated by living specimens and lantern slides.

There are several other strange "sports" among Tulips. For example, Parrot Tulips with the petals cut and laciniated and splashed with body colour and even with green, have been known since 1665. Most of the Parrot Tulips are red varieties of unknown origin, but of recent years one or two have arisen among known varieties with white grounds as "sports," but whether they breed as such has never been ascertained. It seems a good working hypothesis to suppose that "parroting" is also due to a virus or a combination of viruses, and Miss Cayley has started experiments to test this idea. Sports of a normal type are not unknown among Tulips, generally a colour change, as, for example, to a deeper shade of pink. Sometimes the ground colour changes and a Tulip that is flushed with pink on a white ground throws a sport flushed with orange on a yellow ground. It is noteworthy that the only changes of this kind recorded are from the white to a yellow ground, from the dominant to the recessive, as though the change came about by loss.

One kind of sport, however, remains inexplicable—the occurrence of "thieves." A "thief" is a sport which has been known to occur in many varied stocks of Tulips, and the odd thing is that the thief is much the same sort of Tulip whatever the variety from which it has originated. It is a narrow-petalled, weak-looking flower flushed with pink on a ground often tinged with yellow, so characteristic that in the past it was even endowed with specific rank as T. platystigma. Although thieves have been known for a long time, it has only recently been made certain that they represent definite changes in a variety and are not rogues due to accidental mixture of another stock. Until they have been investigated by breeding experiments it is almost useless to speculate on their nature.

NOTICES OF BOOKS.

Fertilisers and Manures.

The third edition of Sir Daniel Hall's far-famed book on *Fertilisers and Manures*[*] is now available, and will be welcomed by everyone. Since the appearance of the second edition, issued in 1921, mainly for the purpose of discussing some of the fresh fertilising materials developed during the war, many changes have taken place in our knowledge of soil problems and their relation to manuring. It has, therefore, been considered advisable to subject the second edition to an extensive revision.

Chapter III deals with fertilisers containing nitrogen and consists of an informative account of the immense progress that is being made with the artificial production of nitrogenous compounds from the air. Of these, nitrochalk, prepared by Imperial Chemical Industries at Billingham, will be of special interest to growers in this country. Ammonium nitrate made artificially from its elements, being too concentrated for even distribution as a fertiliser, is mixed with carbonate of lime; hence its name. It contains fifteen-and-a-half per cent. of nitrogen in an active form, and, as it also contains forty-eight per cent. of carbonate of lime, which would improve the reaction and texture of the soil, it should rapidly become a fertiliser of the highest class. During 1928, upwards of 250,000 tons of nitrogen products were made at Billingham and marketed, mainly as sulphate of ammonia. From 1910 to 1926, the total world production of artificial inorganic nitrogen compounds increased from 665,000 tons to 1,385,000 tons. An up-to-date account of the production of artificial farmyard manure is contained in Chapter VIII. According to the Adco patent, straw, and, in fact, any kind of waste plant material which was formerly simply burned, with the loss of its valuable nitrogen, can be converted into a dark brown mass hardly distinguishable from ordinary farmyard manure. On many soils green manuring has been shown to be extremely valuable, especially when there is any shortage of farmyard manure. The real difficulty experienced in utilising green manures on many soils is the way it depletes the water supply for the succeeding crops. Perhaps, after all, the Adco principle will be a more effective means of making good the universal shortage of farmyard manure rather than green manuring.

The chapter dealing with potash fertilisers gives a comprehensive account of the position of the Continental potash industry. The Alsatian deposits are now situated in what has become French territory since the war. It is understood, however, as Sir Daniel explains, that a working arrangement exists between the French and German producers, both as to prices and markets. As a consequence, prices, although below their former level, have not been reduced by unrestricted competition between two such great sources of supply. We are also reminded that the Stassfurt and Alsatian potash mines will probably no longer be the only ones in the field, inasmuch as plans have been suggested for developing commercially the deposits of a dried-up lake-bed in Abyssinia, and also for extracting the potash on a large scale from the waters of the Dead Sea. These waters contain no less than 0·95 per cent. potash in a total salt content of thirty-three per cent.

According to the new Fertiliser and Feeding Stuffs Act (1926), dealt with at some length on p. 375, local authorities are now obliged to appoint an official analyst and an official sampler. The latter has the power to enter the premises of makers and sellers of fertilisers and there take samples, so that the trade is, to a certain extent, now under official control, not, as formerly, set in motion by the purchaser, who in many cases was reluctant to let the vendor know he was having the stuff analysed. Sir Daniel recommends all growers to check regularly their purchases of fertilisers by an official analysis.

The remaining chapters—there are fourteen in all—deal with mixed fertilisers, materials of indirect manurial value, theories of fertilising action, systems of manuring crops, and the valuation and purchasing of fertilisers.

Those who have not been trained on Sir Daniel's *Fertilisers and Manures* might be reminded that the book is primarily intended to serve as a guide to a greater skill and knowledge in the use of fertilisers and manures. There is no lack of text books which give an account of the manufacture and composition of fertilisers, and their analysis; but as this book is intended for growers who are using fertilisers, and students at horticultural and agricultural colleges who are going to use them, Sir Daniel has not troubled to write much about these factors, but has concentrated on the practical side of the business rather than the purely technical. His book is, in fact, a perfect blend of science and practice, and it is hard to suggest how it could have been better written. Attention might also be called to its extremely reasonable price—another point in its favour.

The reviewer has only noticed two, unimportant, misprints. Chapter VIII is wrongly paged in the contents; p. 186 instead of p. 193, and on p. 172, line 10, "contained" should read "obtained"; a slip taken over from former editions. *F. V. D.*

A Seventeenth Century Garden.

The Herbals of the sixteenth, seventeenth and eighteenth centuries contain a great deal of curious information, part real, part imaginary, about the "vertues" of plants. In them we read many strange things, how plants are governed by the stars, and how each has a use to perform in the service of mankind. Miss Meighn has recently compiled a delightful little book[*] of "incomparable recipes and choicest curiosities of many good huswives and learned doctours of physicke" culled from these and other works of the period, which makes very pleasant reading.

Gardens are not forgotten. There is a curious plan of a seventeenth century garden, and in the section headed "Divers Delightes concerning Gardens and Orchards, with the Vertues and Uses of Flowers and Fruits," we read as follows: "When God had made a man after his own Images, in perfect state and would have him to represent himself in authority, tranquillity and pleasure upon the earth, he placed him in Paradise. What was Paradise but a garden, an Orchard of Trees and Herbs, full of pleasure and nothing there but delights . . ."

The seventeenth century author proceeds to extol the delightsomeness of gardens, lingering over the names of his favourite flowers—Roses of several sorts, Woodbine, Cowslips, Primroses and Violets. He then adds:—"And all these by the skill of your Gardiner, so comelily and orderly placed in your borders and squares, and so intermingled that one looking thereon, cannot but wonder to see what Nature corrected by Art, can do."

There is a romantic charm about these old authors, even the quaintness of their spelling having an attractive air of freedom. No doubt they were shockingly unscientific; but there is a time for science and a time for romance and imagination, and it is good sometimes to give free rein to fancy in the contemplation of our gardens and the myriad beauties of Nature.

We are, therefore, much indebted to Miss Meighn for her charming little book, which can be slipped in the pocket and dipped into at any time when fancy would transport us back three hundred years or so. *H. S. R.*

Japanese Crabs and Nectarines.

We learn from an introductory note to this book[†] by the Marquis Nabeshima that, in 1912, a horticultural experiment station was established in a garden belonging to him, which was situated in a suburb of Tokyo, the subjects experimented with being vegetables, fruit trees and flowering plants. Later, as has happened with innumerable nurseries and gardens near London, the experimental ground became surrounded by houses, due to the growth of Tokyo, so that, in 1922, the work had to cease.

The present book deals with the Crabs and Nectarines which were cultivated there and which were of particular interest to Japanese horticulturists as being varieties originating in Japan, or derivatives of native types. Owing to the introduction to Japan of various fruits of superior quality from foreign countries, these native kinds are being rapidly ousted; some of them, indeed, have almost disappeared. One object of this work is, by means of description and illustration, to provide a permanent record of them while it is still possible.

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[*] *Fertilisers and Manures*, by Sir A. Daniel Hall. Third edition, revised and enlarged; pp. 414. London: John Murray. Price 8s.

[*] *A Little Book of Conceited Secrets and Delights for Ladies*. . . . . Newly set forth by Moira Meighn. London and Boston: The Medici Society. Price 2/6 net.

[†] *The Crab Apples and Nectarines of Japan*, by Yoshichi Asami. Tokyo, 1929.

The types of Crab (Malus) dealt with are seven, viz., asiatica, prunifolia, micromalus, Halliana, baccata, cerasifera and Sieboldii. Of these, only Halliana, baccata and Sieboldii appear to be represented in a genuinely wild state in Japan. Owing to cultivation and hybridisation, the identity of many forms is difficult to establish, and there is a woeful confusion in their nomenclature. Such familiar specific names as Toringo, Sargentii, Ringo and Zumi all appear here as varietal or synonymic.

The article on the Nectarines of Japan is of purely Japanese interest. The varieties are given under their native names, and in general are admitted to be inferior to introduced varieties although they are often remarkably fertile.

The book is excellently printed in very good English, although mistakes in spelling are frequent. It is illustrated by fifty reproductions of photographs and by an equal number of full-page plates. The latter were drawn by Mr. H. Sanada, who deserves every praise for his work, combining as it does the delicacy, accuracy and charm which has for so long characterised plant portraiture by his countrymen.

BOG AND WATER GARDEN.

GYROSTACHYS STRICTA, RYDB.

This very chaste and deliciously fragrant terrestrial Orchid is a native of the greater part of Canada and the United States, ranging as far south in the latter country as the Rockies of Colorado. It is a bog-loving species and is generally found in sandy, spongy peat, in open, more or less sunny situations, in bogs, and frequently on the shores of pools, both in the lowlands and at considerable elevations above sea-level.

The root system of Gyrostachys stricta (Fig. 184) consists of several more or less spindle-shaped tubers from three-quarters- to one-and-a-half-inch in length, together with a few short, white roots which spring from the base of the stem. The narrowly lance-shaped or narrowly oblanceolate, pointed leaves, from two to eight inches in length, are produced near the base of the rather slender, erect flower stem, which reaches a height of from four to fourteen inches, and is clothed with several rather widely-separated, reduced leaves or bracts.

The flowers are produced in a dense, more or less twisted spike two to four inches in length, mingled with short, narrowly-pointed bracts The individual blossoms are from one-and-a-quarter- to three-eighths-of-an-inch in length, very open at the mouth, with a broad, blunt or pointed upper sepal, narrow petals, and lateral sepals, and an oblong lip, broad at the base, then contracted and dilated and rather wavy at the tip; they vary from pure white to white, shaded green, and are rather thin in texture.

This species blossoms in July and August and should prove attractive on the edge of a pool in an open, sunny spot in the rock garden, or on the margin of an artificial bog, in sandy peat and loam.

G. stricta has, until comparatively recently, been confused with the Alaskan Gyrostachys Romanzoffiana (Spiranthes Romanzoffiana of most British authors), and is no doubt the same plant that is found in western Ireland. The true Gyrostachys Romanzoffiana (Cham.) may be distinguished from the above species by its very short, crowded spike not exceeding one inch in length; by the upper portion of the flower stem being densely glandular; downy—and also by the shape of the sepals, which are sharply toothed at the tip. *A. W. D.*

NYMPHAEAS.

The time has now arrived for giving ponds containing these beautiful plants their annual cleaning. Of all aquatics, none can compare with the Nymphaeas, especially if a choice selection of the newer, beautifully coloured hybrids is grown. The vigorous-growing, larger sorts are unsuitable for small ponds, as they soon become crowded with leaves and cover most of the surface of the water, with the result that both the plants and the water lose their attractiveness.

Such Water Lilies as N. Gladstoniana, N. chromatella, N. Colossea and N. Sumptuosa, should only be used where large stretches of water are available. These, if the ponds are natural and contain a deposit of decaying vegetation, and if allowed plenty of room for development, will not require dividing for four or five years.

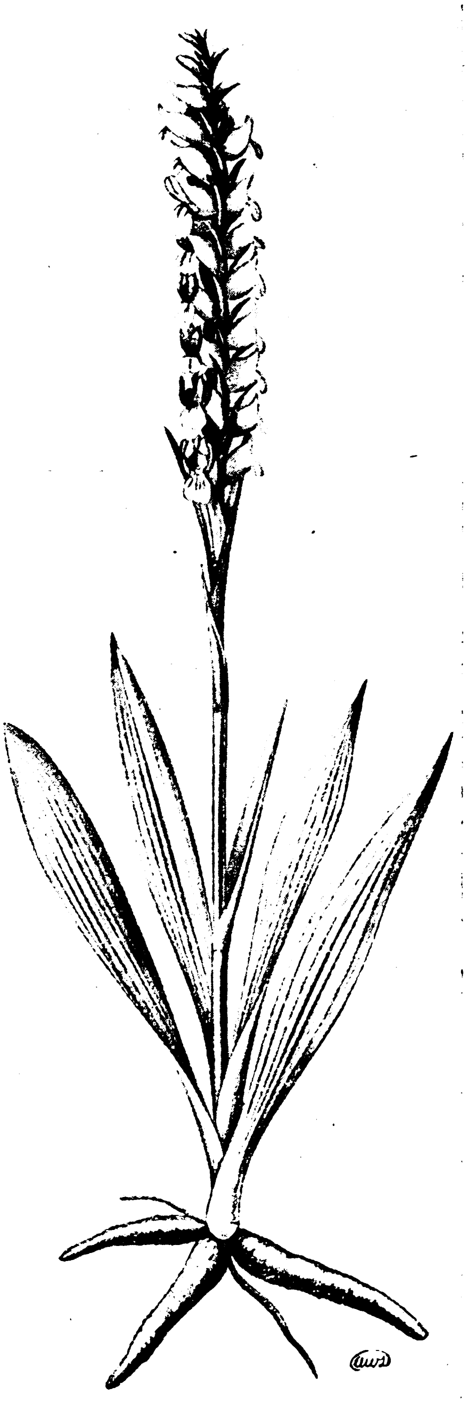

FIG. 184.—GYROSTACHYS STRICTA.

Nymphaeas delight in rich soil, and they should be planted in a mixture of heavy loam, with about one-third of well-decayed cow manure. Various methods are adopted when planting Nymphaeas, the most commonly employed being to fill baskets with prepared compost and plant the roots in these, with only the crown showing above the soil, then sinking the basket in the desired position. Such is the best method for deep ponds, and where it is impossible to drain the water off before planting. In those where the water can be drained off, mounds of the planting material may be placed in the positions selected, and the crowns, when planted, held in position by pegs or stones placed over the roots until they get hold of the soil. Depth of planting is an important factor, and many of the choice varieties will grow in quite shallow water. A depth of from eighteen inches to two feet will be sufficient for any variety, but many of the weaker-growing kinds will be happier in water from one foot to fifteen inches deep. These Nymphaeas are often planted by the margins of ponds, where they are overshadowed by trees; such positions are not suitable, for Nymphaeas require the benefit of full sunshine and still, clear water, before the full beauty of their flowers can be fully appreciated.

The pure, glistening white blooms of N. Gladstoniana, floating on the still surface of the pond, appeal to many, but it is among the delightful hybrids raised by Mons. Latour Marliac and other enthusiastic hybridists, that we find the greatest charm, when we look upon a peaceful sheet of water on which are gracefully floating these glorious flowers ranging from pure white, through every shade of pink, to deep red. Many varieties are offered, all having their good points, and a selection might, with advantage, include Escarboucle, Aurora, Robinsoniana, Arethusa, Formosa, Sioux, Mrs. Richmond, James Bryden, atropurpurea, Brackleyi, Marliacea var. rosea and Murillo.

In the section of small-growing Nymphaeas which can be grown successfully in tubs or small tanks, provided these receptacles are placed in full sunshine, are a few charming varieties. N. tetragona (pygmaea) var. alba, the smallest-flowered member of the genus, needs only two or three inches of water in which to grow successfully. N. t. var. helvola is the sulphur-yellow form, well worth growing. N. odorata var. Exquisite, N. o. var. sulphurea, N. Laydeckeri var. fulgens, and N. L. var. purpurata, are all worth including where small, shallow pools have to be planted.

Of the tropical species, with their gorgeously-coloured flowers, the beautiful N. stellata will succeed in the open and flower during summer if potted and started in a warm greenhouse and placed in its flowering quarters in early June. At Wisley, N. stellata is grown in a tank in the open, which is heated by hot-water pipes passing through it. Under such conditions, this attractive Water Lily grows and flowers freely, its stellate, lavender-blue flowers being greatly admired. When grown like this the tubers should be lifted and replanted every two years, retaining only the strongest crowns for replanting. *F. W. G.*

GENTIANA ANDREWSII.

It may well be argued, and often is, that a member of such a genus as Gentiana—rich in highly decorative garden subjects—which refuses to open its blooms to the light of day, is of no garden value. Yet, for its own special purpose, G. Andrewsii, for such is the member referred to, is not without charm, and is certainly worth growing as a novelty, even although it is not strikingly decorative.

This Gentiana's place is in the bog garden, where it will grow freely, for it is comparatively easy to establish and is a good perennial provided the soil is not too cold and heavy; under the latter root conditions it is not long-lived and gradually dies off.

When happy, the Dumb Foxglove, as it is ironically termed in America, its native country, will produce an abundance of slender stems eighteen inches or more long, which will ramble and trail through the other herbage of the bog garden, to be terminated from July until September with clusters of long, bulging flowers, rich, but rather dull, dark blue in colour and tipped with white. The flowers appear rich in promise, but the plant lover waits in vain for them to open—therefore G. Andrewsii is termed the Dumb Foxglove, and although quaint and a provider of colour in the bog garden at a season when it is needed, it is yet a disappointing plant, and so must remain.

In passing, mention may be made of another Gentian which, although not striking, is yet an acquisition to the bog garden, namely, G. Pneumonanthe, our native Marsh or Heath Gentian, and not uncommon throughout Europe, and Russian Asia—in the British Isles it is confined chiefly to northern England, and is stated to be non-indigenous to either Scotland or Ireland (Bentham and Hooker's *British Flora*). It delights in cool, rather moist and peaty soil, and produces straggly, slender stems, up to about eighteen inches in length, and set with pairs of leaves, the lower oblong-lanceolate, and the upper, in the axils of which the flowers are produced, almost linear. The flowers appear in late summer; they are trumpet-shaped, an inch-and-a-half long, with short, broad, spreading lobes, and are deep blue, attractively marked and shaded with green. There is also a desirable form of G. Pneumonanthe with pure white flowers, speckled with gold and green, while the variety from the Alps, sometimes called G. P. var. arvernensis, is described as attaining double the size of the type, and would appear to be specially worth obtaining. It flowers, like the type, in August, and requires similar cultural treatment. *W.*

TREES AND SHRUBS.

CYTISUS ARDOINII.

If I were ever doomed to grow but one rock-garden Broom, this delightful little species of the Maritime Alps would be my choice. There is a charm about this tiny shrub which is irresistible, and a distinctiveness which never fails. Growing to no more than some four inches high, the decumbent branches spread over a square foot, or perhaps more. The tiny, trifoliate leaves, as well as the twigs and calyces, are densely downy. In April and May the plant becomes a mass of blossom, the blooms being borne in small but numerous clusters at the tips of the previous year's wood. Each of these flowers is nearly half-an-inch in length, and they are a particularly rich nasturtium-yellow. Add to this warm colouring the facts that the blossoms are of unusual substance, and that the standard petal is so rounded and incurved that it gives the flower a full and ample appearance, and C. Ardoinii will never fail to attract admiration in spring.

In any open spot C. Ardoinii will generally do well and prove both hardy and long-lived. Although its disposition to hybridise with other kinds may be a deterring factor with those who desire to increase it by seeds, it has been the means of giving us some valuable hybrids, notably C. Beanii and C. kewensis, of both of which it is the seed parent. The best way to propagate C. Ardoinii is probably by cuttings rooted in very sandy soil in a close frame during late summer. But well-established plants will sometimes give self-rooted branches that can be detached with sufficient roots at the base to start them with the help of a handlight. *J.*

THE LARGEST DAVIDIA.

In *The Gardeners' Chronicle* of March 9, p. 182, there appeared an interesting article on that marvellous tree, Davidia involucrata; may I inform the many readers of this journal that there is in France, I believe, a bigger specimen than any other. It is in the large Arboretum of M. A. Gérard, at La Fosse (Loir et Cher), where some very big and rare trees have been cultivated for generations by the Gérard family. This Davidia stands as a king, set among rare Conifers and evergreens. When we were there two years ago, in the month of May, my friend Professor Bois, of the Museum of Natural History, Paris, and I, could not but admire it. Imagine a dark mass of large green leaves, starred with pure white flowers as big as those of certain Magnolias. The specimen is thirty-eight feet tall, and its girth at three feet is twenty-nine and-a-half inches; it has a horizontal spread of twenty-four feet, and its first branch is about two feet from the ground. Every year—except those of late frosts—it produces from 800 to 1,000 nuts. These germinate very slowly, sometimes only after two or three years, and very irregularly. Indeed, most of them fail to germinate, and it is supposed that fertilisation is rather difficult. This tree was planted in 1906 from Vilmorin's seeds, and the resulting plants are those of the Vilmorin form and not of Wilson's. It began to flower in 1911, and since then it has always flowered more or less every year. *H. Correvon, Geneva.*

PRUNUS PERSICA VAR. FLORE SANGUINEO PLENO.

Passing a garden recently in which an exceptionally fine specimen of this beautiful Peach is established in a setting of dark Pines, its masses of strikingly coloured blossoms completed a picture of exquisite charm and beauty.

It flowers some weeks later than the Almond but is by no means so robust as it, or so vigorous in growth, or tolerant of the impure atmospheric conditions of large towns, where it appears to languish and gradually die out. It is, however, together with the rose-coloured variety, a splendid subject for inclusion in planting schemes where conditions are more favourable. Unfortunately, these ornamental Peaches are very liable to canker, which fact is generally attributable to their being worked on the Myrobalan Plum stock, and they are apt to become slow and stunted in growth. However, much may be done to assist them in this latter respect by judicious mulching and attention during the first few years after planting. *H. G. King, Twickenham.*

SOME PERENNIAL SPECIES OF LATHYRUS.

The Everlasting Peas constitute a somewhat neglected part of a popular family. So far, none of them has been induced to assume colours beyond what occur naturally in a state of nature. Yet they possess so many good qualities that it only needs some variation in colouring to place them in the front rank among herbaceous climbers.

Looking back over fifty years spent in gardens, and noting the development of the annual Lathyrus odoratus, the Sweet Pea, from the three or four varieties exhibited in 1875, it seems not unlikely that hybridisation may yet cause a break in the stereotyped tints of the perennial Lathyrus. Once this has been achieved, breeding and selection will probably bring about a series of varieties having novel and beautiful shades.

The commoner kinds, purchased as small plants or raised from seeds, flourish in any good garden soil, and only need planting firmly in an open, sunny place to secure establishment. Unfortunately, slugs are very fond of the young growths, and will, unless prevented, destroy them in early spring.

To one who has gathered the wild Lathyrus sylvestris trailing over its native hedges under the South Downs, a stiffly-trained Everlasting Pea on a trellis appears as if crucified. True, they need supports to which they can cling with their tendrils at an early stage; it may even be necessary to start by tying the young growths in the right direction, but after that, let the shoots cluster together naturally The result will be less uniform, but far more pleasing to the artist's eye.

Lathyrus sylvestris var. latifolius is decidedly the best garden plant we have in this section. It can be used, with the help of "Pea boughs," to form a handsome mass at the back of a herbaceous border, and may be employed to hide the not always beautiful supports of a verandah or summer-house, but is, perhaps, never seen to better advantage than when planted at the foot of a low terrace wall and allowed to trail over it, making a cloud-like mass of greenery, covered with handsome flowers. The colour of the flowers—a rich purplish-rose—is not always easy to associate with that of other flowers, but that difficulty does not extend to the charming blush variety or the pure white form.

Lathyrus grandiflorus is a native of southern Europe. Its large, purplish-red flowers are beautifully shaped and smooth in contour. As its roots travel beneath the soil and send up a multitude of shoots, it should not be placed near enough to choice plants to endanger them by smothering, but among commoner shrubs it will often hold its own and decorate their branches when their own flowers have faded.

Lathyrus rotundifolius (syn. L. Drummondii), a very attractive Pea, is a native of Persia and Asia Minor; except in the colour and size of its flowers it is a small counterpart of L. s. var. latifolius, which it equals in hardiness and freedom of growth, often reaching a height of six feet when established in good soil. The flowers, borne in racemes, appear in May, and continue until July. All the text-books unite in libelling their colour and describe it as bright rose, pink or rose, making no difference between this Pea and L. s. var. latifolius. As a matter of fact, its colour is most distinct, and is described by an Ipswich firm which catalogues this Pea, as "salmon-red"; writing from memory, this certainly appears a truer description than the other three.

Lathyrus pubescens is a most charming Chilian species, but it can only be grown in the more favoured parts of this country. Seeds are occasionally listed by at least two of our English seedsmen who cater for lovers of rare plants. They should be sown in late summer, wintered in a frame, potted on in February, and planted out at the foot of a south wall in April. If the soil is good, vigorous growth ensues, and support will be needed, a piece of large-meshed wire-netting, as used for sheep enclosures, serving the purpose admirably if fastened securely to the wall. Before winter sets in, a strand or two of wire passed through the mass of growth will secure it against storms, and flatten it somewhat so that it can be protected by a mat. A few shovelfuls of coal ashes will give added protection to the roots. If the winter is a mild one, growth commences early, and on these shoots the dense racemes of large, lavender-coloured flowers appear later. During the recent Andean Expedition, the white variety L. p. var. albus, was found in quantity at Calafquen, Chili (Comber, 1,096). The collector describes it as growing from six to thirty feet in height, in open places at an altitude of 800 feet to 1,500 feet, and succeeding best when its roots are shaded by the bush it climbs on.

Lathyrus nervosus, Lord Anson's Blue Pea, for many years held a great fascination over gardening enthusiasts as something very desirable but unobtainable. Many considered it similar to L. latifolius, with flowers the colour of Salvia patens. Twenty or thirty years ago, seeds of it were often advertised, but when purchased proved to be those of L. sativus, the Chickling Vetch. A full description and history of the true plant appeared in *The Gardeners' Chronicle*, Vol. LXXXI, p. 320, by Mr. J. Coutts, of Kew. The article gives so much information and dispels so many illusions, that it is well worth referring to.

Mr. T. Hay, Superintendent of Hyde Park, was the first to re-introduce L. nervosus, in 1926, and very kindly gave me some seedlings the same year. These plants produced typically purplish-blue and white flowers and later, seeds; a second generation has been raised from them, but the older plants are not "everlasting," for when about to flower the second time, the lower leaves turn yellow and the stem dies upwards gradually, as if the plant had been overwatered. It is also subject to mildew, but this applies equally to L. magellanicus and L. setiger, even when grown in an open field. As L. nervosus is a maritime plant, perhaps some gardener living near the coast has had better success with it.

My plants, grown in well-drained seven-inch pots, in loam, leaf-mould and grit, reached a height of two feet before flowering. The younger generation, from home-saved seeds, has already attained a similar height, and is supported with Birch twigs. A few will be planted outside so soon as the weather is more favourable. *J. Comber, Nymans Gardens.*

THE GENUS PRIMULA.

(*Continued from p.* 326.)

MINUTISSIMA (Jacq.). Minute P.
(Minutissimae.)

A DELICATE, extremely dwarf perennial species, forming large patches of dense, dark green foliage from creeping stolons. The individual rosettes are about three-quarters-of-an-inch across and composed of numerous spathulate-lance-shaped, or broadly lance-shaped, pointed leaves a quarter- to half-an-inch long; margins furnished with sharp or blunt teeth; upper surface usually smooth, underside more or less mealy. Flower stem very short, sunk among the leaves, and bearing at its tip one to three bright purple, stemless blossoms. Corolla three-eighths- to five-eighths-of-an-inch across, divided into five broadly heart-shaped, very deeply cleft lobes; tube a quarter- to three-eighths-of-an inch long, many times longer than the calyx. Flowers in July. (Duby, *Mémoire sur la famille des Primulacées*, t. 1, Fig. 3).

Grows in open, alpine pastures and moorlands, usually on limestone, in the Kumaon and Kashmir Himalayas, and also in western Tibet, at from 12,000 to 16,000 feet above sea-level.

Culture: Grow it in peat and sandy calcareous loam, in an open spot in the rock garden, planted among dwarf grasses or low alpine subjects; or in an alpine house or frame in a compost as prescribed above.

MISTASSINICA (Michx.). Mistassinian P.
(Farinosae.)

This plant is considered by many botanists to be a sub-species of the variable P. farinosa. It has spathulate, or egg-shaped, blunt leaves, wedge-shaped at the base, half-an-inch to three-quarters-of-an-inch long, with sharply-toothed margins; both surfaces are smooth, or at times slightly mealy on the underside. Flower stem one inch to six inches tall, bearing a loose umbel of rose-coloured, pale purple or pale mauve-pink blossoms similar in shape to those of P. farinosa, and about half-an-inch across. Introduced in 1818.

Grows on wet slopes in elevated situations, in eastern North America, from Newfoundland to the Rockies, and is also found in northern Europe.

Culture: As for P. farinosa; an easy plant to cultivate.

MIYABEANA (Ito et Kaw.). Miyabe's P.
(Candelabra.)

A deciduous perennial, but usually biennial under cultivation, with a tuft of oblong-egg-shaped or broadly lance-shaped, blunt or pointed leaves four to eight inches long, gradually tapering to a broad, winged stalk; margins furnished with sharp teeth; both surfaces more or less mealy when young, usually quite free from meal when mature. Flower stem eighteen to twenty-four inches tall, quite free from meal when mature, bearing several superposed umbels of six to ten purple or magenta blossoms, on spreading stalks up to one-and-a-half inch long. Corolla flat, about five-eighths-of-an-inch across, divided into five broadly heart-shaped lobes; tube cylindrical, about five-eighths-of-an-inch long, with a ring in the mouth. Flowers in May. *Bot. Mag.*, t. 8,603. Introduced in 1913.

Grows in moist alpine pastures, etc., on Mount Morrison, in Formosa, at about 17,000 feet above sea-level.

Culture: As for P. japonica; quite hardy in southern and western Britain.

MODESTA (Bisset et Moore). Modest P.
(Farinosae.)

Pax made this plant a sub-species of P. farinosa, but by others it is considered a good species. It produces a tuft of spathulate, mealy leaves, one inch to two inches long, with the margins furnished with saw-like teeth. Flower stem slender, two to four inches tall, bearing an umbel of about ten lilac-purple blossoms. Corolla about five-eighths-of-an-inch across, divided into five somewhat narrow, deeply cleft lobes; tube twice as long as the calyx.

Grows in damp, open pastures in elevated situations in Japan.

Culture: As for P. farinosa (Illustrated in *Jour. Roy. Hort. Soc.*, Vol. XXXIX, 1913). Introduced in 1911.

Var. Fauriei (Franch.). This form is considered to be a good species by Pax. It is distinguished by the sulphur-yellow meal on the undersides of the leaves. The flower stem reaches a height of two to four inches and bears a few-flowered umbel of rose-coloured flowers half- to five-eighths-of-an-inch across. Japan (Illustrated in *Notes from the Botanic Gardens, Edinburgh*, 1913.)

Culture: Grow it in the same soil and position as for P. farinosa, but under drier conditions.

MOLLIS (Nutt.). Downy P.
(Cortusoides.)

This somewhat robust Himalayan perennial species produces a tuft of densely downy leaves with rounded blades about three inches long, deeply heart-shaped at the base, rather thick in texture and blunt at the tip; they are borne on stout, downy stalks three to six inches long; margins lobed and furnished with irregular teeth. Flower stems numerous, rather stout, downy, twelve to twenty inches tall, bearing two to five superposed umbels of few, or many, rosy-lilac to deep rose-coloured blossoms. Corolla about half-an-inch to three-quarters-of-an-inch across; lobes egg-shaped, notched, flat; tube cylindrical, about five-eighths-of-an-inch long, exceeding the calyx in length. Flowers in August. Introduced in the year 1845. (*Bot. Mag.*, t. 4798).

Grows in damp, shady places in the Bhutan Himalayas, at rather low elevations.

Culture: This species is rather tender, and is only suitable for outdoor culture in warm localities; it may be tried in a very sheltered, shady spot, in peat and loam well-drained in winter.

MONANTHA (W. W. Sm.). Solitary-flowered P.
(Farinosae.)

This dwarf plant is a sub-species of P. gemmifera (Batal.); it forms a sparse, loose rosette of sub-orbicular or broadly spathulate, somewhat fleshy leaves half-an-inch to one inch long, rounded at the tip, somewhat abruptly contracted at the base into a winged stalk equalling the blade in length; margins toothed and edged with minute, capitate glands; both surfaces sparsely coated with white meal. Flower stem flexuous, one-and-a-half- to two-and-a-half inches tall, sparsely coated with white meal and bearing at its apex a solitary, purplish-rose blossom on a slender stalk about a quarter-of-an-inch long. Corolla flat, smooth, half- to three-quarters-of-an-inch across, with egg-shaped, notched lobes; tube cylindrical below, slightly dilated upwards, about half-an-inch long. Flowers in July.

Grows in stony, alpine meadows on the the Mekong-Yangtze Divide, in Yunnan, western China, at about 14,500 feet above sea-level.

Culture: As for P. farinosa.

MOORCROFTIANA (Wall.). Moorcroft's P.
(Nivales.)

This handsome, deciduous perennial is considered to be a sub-species of P. macrophylla (Don). The somewhat thick leaves, produced in tufts, and not fully developed at flowering time, have lance-shaped or narrowly oval blades, tapering to a winged stalk dilated at the base, in all from two to four inches long and about five-eighths-of-an-inch wide; margins usually quite entire; both surfaces more or less smooth, underside at times slightly mealy. Flower stem four to eight inches tall, stout, bearing an umbel of purple blossoms on short, stout stalks. Corolla about three-quarters-of-an-inch across, with heart-shaped, notched lobes.

Grows in damp alpine meadows in Kumaon, Kashmir and south-western Tibet.

Culture: As for P. macrophylla.

MOOREANA (Balf. f.). Moore's P.
(Capitatae.)

This beautiful, deciduous perennial plant, which is in cultivation under the name of P. capitata, of which it is probably a sub-species or microform, is the finest member of the section Capitatae. It produces a rosette of membranous foliage which is contemporary with the blossoms; the oblong-egg-shaped or broadly lance-shaped blades are from four to six inches long, rounded at the tip, gradually tapering to an obscure, winged stalk; margins furnished with obscure, irregularly-toothed lobes with horny tips; upper surface green, furnished with meal-producing, glandular hairs; underside densely coated with white meal and coarsely reticulated, Flower stem nine to twelve inches tall, stout, densely covered with white meal, erect, bearing a many-flowered head of reddish-violet blossoms. Corolla concave, about three-quarters-of-an-inch long, divided into five overlapping, egg-shaped, nearly square or rounded, notched lobes; tube cylindrical below, inflated above, red at the base, white above, with a green throat and an obscure ring. Flowers in August and September.

Grows in damp, rocky alpine pastures, in the Sikkim Himalayas, at 10,000 to 16,000 feet above sea-level.

Culture: As for P. capitata.

MORSHEADIANA (Ward). Morshead's P.
(Candelabra.)

A handsome, dwarf, perennial species with a rather stout rootstock emitting numerous thick roots. The leaves, in rosettes or tufts, are membranous, with broadly lance-shaped blades two to three inches long, rounded at the tip and gradually tapering to a winged stalk; margins furnished with sharply pointed, hooked teeth; both surfaces smooth, underside paler than the upper. Flower stem about three inches tall, smooth, bearing from three to eight golden-yellow blossoms in an umbel, on stalks a quarter- to half-an-inch long. Corolla about half-an-inch across, with rounded, egg-shaped, entire or obscurely-toothed lobes; tube cylindrical, about half-an-inch long. Flowers in June and July.

Grows on steep alpine slopes in very dwarf herbage on Doshong La, in south-eastern Tibet, at 10,000 to 13,000 feet above sea-level.

Culture: Good fibrous loam and grit, in an open, sunny spot well supplied with water when the plant is in growth, should suit it.

MOSCOPHORA (Balf. f.). Lichen P.
(Bella.)

A very beautiful, dwarf, perennial sub-species of P. bella (Fr.); it produces stolons or offsets about three inches long from the main root-stock, each with a tuft of oblong-elliptic, egg-shaped or narrowly spathulate leaves, about five-eighths-of-an-inch long, with blunt tips and long, winged stalks; margins irregularly toothed; upper surface dull green and sparsely furnished with meal-producing, glandular hairs; underside densely coated with white meal. Flower stem slender, about five-eighths-of-an-inch tall, coated with white meal and bearing a solitary lilac blossom. Corolla about one inch across, concave, downy, with wedge-shaped or nearly square segments divided into two oblong, deeply cleft lobes; tube about half-an-inch long, smooth outside, furnished with a sparse tuft of white hairs in the throat. Flowers in August.

Grows in moist, stony pastures among moss and Liverwort, on the mountains of the Shiveli-Salween Divide in Yunnan, western China, at about 11,000 feet above sea-level.

Culture: Peat, and gritty, calcareous loam, in an open spot well supplied with moisture when the plant is in growth, are indicated. *A. W. Darnell.*

(*To be continued.*)

MARKET FRUIT GARDEN.

With only 0·77 inch of rain, April did very little towards breaking the extraordinary spring drought. It was, in fact, the driest April of which I have any record. In view of the frosts which were frequent towards the end of the month, it was probably fortunate that the weather was so dry. To this, and to the fact that earlier conditions had been of a hardening rather than a forcing nature, may be attributed the slight apparent damage done by frosts of 6° in the air which occurred on several occasions. Ground frosts were much more severe. What may have been the actual effect of the cold weather on the setting of fruits remains to be seen, but the visible damage was surprisingly light. I expected to find the pistils of fully-open Plum blossoms blackened by the frost, as happened with some varieties in the last two seasons, but this did not occur. The blossom of Black Currants was affected in low-lying spots, particularly in the case of Baldwin, which is the earliest to flower. It was the end buds on the bunches that were damaged; and the result will be short bunches and a reduction in the weight of the crop. I do not altogether like the appearance of some of the Apple blossom, now in the pink bud stage. The first leaves surrounding the buds have a pinched look, probably due to the severe frosts experienced earlier in the spring. A few buds of Bramley's Seedling were frozen through in the early green stage, and now drop off at a touch and are found to be brown inside. This damage is not sufficient in my plantations to affect crop prospects materially; and I should not have noticed it if I had not looked specially for it, after hearing reports of wholesale injury of this kind in some parts of Kent. It is curious that Bramley's Seedling, usually considered to be one of the hardiest varieties, should be the only one to be subject to this early frost damage.

The first blooms of Plums opened on April 19, and all varieties, except Pond's Seedling and Belle de Louvain, were in full bloom by the end of the month, as were most varieties of Cherries. This is about a month later than last year, which was a medium or normal spring. No Apple blossom was open in April. It was generally hoped that such a late blossoming period would prove to be safe, but such hopes were disappointed. However, my place is fairly high up and within sight of the sea, which means that I usually suffer less frost damage than many growers less fortunately situated; so I am not unduly alarmed.

Plum Blossom.

If the Plum blossom manages to set in spite of the cold weather there should be a good crop. Young trees of all varieties are flowering profusely, and there is a better display in the older plantations than I anticipated. In the latter, Monarch and Pond's Seedling, which cropped well last season, are the only partial failures. Rivers' Early Prolific, Czar and Victoria bloomed profusely, and President moderately. Some large trees of Belle de Louvain will be a mass of blossom in a few days.

In such a spring much good work in fertilising fruit blossom is done by wild humble bees. Many of these insects were busy among Plums and Black Currants on cold and windy days when very few hive bees were to be seen. They always seem to do a great deal of the fertilising of the latter crop. I fancy these bees are particularly numerous in my district, which may account for the fact that Black Currant Boskoop Giant does not "run off" so seriously as it does in some places.

Spraying Against Scab.

The pre-blossom spraying of Apples for the prevention of scab began in the last week of April. Last year, I only just got round before the blooms opened; so this season spraying started at a rather earlier stage in the development of the blooms. After all, no one knows quite which is the best stage for this operation; and, on a place of any size, one certainly cannot catch all the trees in exactly the same condition. Previously, I have dealt with early-blossoming varieties first and the rest later. This adds so much to the time and work involved that I am now spraying all varieties at the same time. This year they are more level in development than usual, Worcester Pearmain and Lane's Prince Albert being little behind Beauty of Bath.

The making of Bordeaux mixture with hydrated lime is proving a much easier matter than with quicklime, and the stuff is so fine that there is hardly any blocking of nozzles. The slaking of lime on a large scale is a heavy business; and I hope that the Bordeaux mixture made with hydrated lime will prove equally effective, so that quicklime will never have to be used again.

There has been some difficulty in getting water for spraying some of the plantations, a new experience so early in the season. Most of the plantations can be sprayed direct from ponds or streams, but for some, water had to be carted a long way, and it was a struggle to get it delivered quickly enough. With four nozzles we have been spraying about four acres of fairly large trees per day.

The only insect damage to be seen on Apples after the winter spraying with tar distillate is an unusual type of injury done, I am told, by the Apple blossom weevil. This takes the form of piercing and lacerating of the young leaves surrounding the blooms, work which the weevils do at night. The same damage has been noted in Kent; and I am told that, in a previous season when this pest behaved in the same way, there was less than usual of the ordinary harm caused by this insect—the "capping" and destruction of bloom buds.

Spray Injury.

A conference of research workers and fruit-growers held recently at the East Malling Research Station did not bring to light anything definite about spray injury. Apparently there is at present no spraying programme which can be depended upon to control Apple scab without some risk of doing a little harm. It is a matter which depends very much on weather conditions at the time of spraying. It is very desirable that this risk should be removed, because there are many growers who are unwilling to do a little harm in order to do a great deal of good, and consequently will not spray at all. One hopeful fact brought out at the conference was the report that the addition of a small quantity of aluminium sulphate to lime-sulphur has given good results in Canada in preventing the leaf injury and fruit dropping which lime-sulphur alone sometimes causes. This will no doubt be tried by research workers in this country. The only drawback is that one cannot add the usual lead arsenate, but must use instead calcium arsenate.

I think that rather more might be tried in the way of dilute fungicides. A good many of us now use lime-sulphur as weak as one part in one hundred on sensitive varieties. It was mentioned at the conference that one part in 150 did no harm, but gave a poor control of scab; so it is probably unwise to go beyond one in one hundred. In the case of Bordeaux mixture, it has been usual to try the addition of various quantities of excess lime in order to render the wash less harmful, but little has been done in the way of diluting with an extra amount of water. This was tried, however, in some trials carried out last year in the eastern counties by Messrs. Petherbridge, Dillon, Weston, and Kent. A half-strength excess-lime Bordeaux mixture containing only 1½ lb. of copper sulphate and 5 lb. of quicklime to forty gallons of water, gave results little inferior to those obtained with a normal excess-lime formula giving double the amount of the two chemicals. Spraying was done three times, once just before blossoming and twice afterwards. The half-strength Bordeaux mixture gave a decidedly better control than lime-sulphur at one part in thirty before blossoming and one in sixty after. Even with such a weak mixture, however, there was a little russetting of the fruits of Worcester Pearmain, a variety not easily injured by fungicides. I am trying this half-strength Bordeaux mixture this year as a pre-blossom spray for Cox's Orange Pippin; but I dare not use Bordeaux mixture at all after blossoming.

Very dilute washes have been tried in America, notably at the Ohio Experiment Station. Bordeaux mixtures in which the copper sulphate varied from ½ lb. to 3 lb. in fifty gallons of wash gave results as nearly uniform as if the same strength had been used on all the plots. It is evident, therefore, that we might go further than we have done in the diluting of Bordeaux mixture in the search for a safe and efficient wash.

Dry Spraying.

Partly owing to the risk of doing harm by spraying, and still more because of the heavy work of wet spraying and the difficulty of getting over the ground quickly enough to catch the trees at the right stage, some growers are again taking an interest in dry spraying, or dusting. This costs more for material than liquid spraying, but very much less for labour; and it is done so rapidly with the larger machines that the trees can be treated at more frequent intervals. For dealing with certain insect pests the method has already given satisfaction to some of those who have tried it. The dusting of Gooseberries for the prevention of American mildew has also given good results. As a means of controlling scab, however, it has yet to prove its value in this country. In some countries abroad it is used in preference to wet spraying, in others not, from which it may be assumed that the result varies with the prevailing climatic conditions. Apparently, efficient work in dusting depends even more on the weather than in wet spraying. Wind is quite fatal to good work. For copper-lime dusts to act well it is necessary that the trees should be wet when the material is applied, and for sulphur dusts it is desirable that warm, dry weather should prevail. Although, theoretically, an exceedingly fine dust should be as difficult as the deposit from a liquid fungicide to wash off by rain, with the materials at present available the effect is not so lasting. The practice abroad seems to be to dust afresh after every rainy period. The hope that dusting would be less harmful may not be well founded, for it is stated that sulphur dusts are quite capable of causing loss of foliage and fruits. *Market Grower.*

VEGETABLE GARDEN.

A NEW VEGETABLE!

For those who live in sunny climes and are in search of a new sensation, I would recommend them to try the young flowering shoots of Yucca gloriosa, cut at the stage when they look like giant Asparagus. I heard that some acquaintances who were held up last year in the wilds of Texas where Yuccas grow wild in profusion, were reduced to cooking and eating them, and found them excellent. So this spring when the Yuccas here began to produce their flower spikes, and knowing that I should not see them in full beauty before leaving this coast, I cut and cooked some spikes. "Cook," of course, objected, but when the dish of "Giant Asparagus" came to table it was pronounced a decided success. There is a decidedly bitter taste, much like that of blanched Batavian Endive, but when stewed and treated like blanched Endive it is a striking addition to the menu, and is both wholesome and enjoyable, succeeding the Asparagus now past. I can confidently recommend it to those who have a sufficient quantity of Yuccas at hand. I could fancy that a wild, rocky valley planted with Yuccas might, in good hands, prove a real success and add a new dish to our menus. *E. H. Woodall, La Selva, Nice.*

HOME CORRESPONDENCE.

Paeonia Cambessedesii.—I send herewith a photograph of Paeonia Cambessedesii that may interest your readers (Fig. 185). It represents a young plant flowering for the first time, showing the flower fully expanded after bright sunshine. This, and older plants which flowered last year, were collected as seedlings in Majorca some years ago. As they have been grown entirely in the open and have come safely through this last winter, one may hope that they are becoming established, and will in time make large plants. The foliage is particularly attractive and the flower graceful, besides having a distinctly "old Cottage Rose" fragrance. The flower illustrated has set seeds. *A. D., Dorset.*

Manuring Arable Land.—Replying to *C. de B.*, regarding the manuring of arable land (p. 314), I have made enquiries in this neighbourhood—mostly light, sandy soil—and find that twenty-two tons, or even twenty-four tons, of manure is not an unusual dressing for Mangolds; in fact, I have seen this amount used on an estate near by. The method used is ridging the ground, placing the manure in the bottom of the trenches, and covering it by splitting the ridges with a ridging plough. If well-rotted, heavy farmyard manure is used, there is no difficulty in covering it, but in the event of the manure being in a greener state, it would be necessary to tread it in the furrow. I do not think it possible to directly plough in this quantity, and as is well-known, if manure is not well covered, it dries up very quickly and loses its value. I consider it should be spread and covered the same day, especially at this time of the year. I cannot help observing that most gardeners would be very pleased to have this quantity of manure available in these days of motors. *J. P., Worcester.*

Partial Soil Sterilisation.—Mr. Shewell-Cooper having thought fit to reopen the discussion on the above subject, I think it only fair to state on behalf of those of your readers he has labelled "incredulous," that I have received letters from interested growers and research workers strongly advocating steaming in preference to baking. One letter is from a departmental head of a very large firm of retail commercial growers, in which he states that his firm found themselves compelled to take up the question of soil sterilisation some thirty years ago, and since then they have spent very large sums of money testing every known device, including the erection of a large "baking" plant, and they have come to the conclusion that "steam sterilisation is the only practical method where soil is wanted in bulk, as is the case with us." Moreover, in your contemporary, *The Fruit Grower*, dated May 2, a Channel Islands correspondent states—under the heading "Dr. Bewley's visit—Glasshouse Problems," that two hundred growers were gathered together to hear Dr. Bewley's latest findings concerning the cultivation of the Tomato, and the following sentence occurs in his notes: "Another point impressed upon us was that there was nothing like steam sterilisation of the soil. The claims of several proprietary sterilisers were mentioned and explained, but at rock bottom there was nothing quite so good as the steam sterilisation." This is from men who are daily "delivering the goods," so what better testimony do we need, notwithstanding Mr. Shewell-Cooper's accusation of incredulity. *T. A. Summerfield, Chelford.*

Salix lanata var. Stuartii.—In reply to Mr. J. Fraser (p. 283), it was not my intention (p. 231) to introduce another Willow in an endeavour to establish the identity of the plant Salix lanata var. Stuartii. I make no pretence at recognising a plant which, so far as I know, I have never seen. On reading (p. 159) that the Wisley plant was named after Dr. Stuart, Chirnside, N.B. (this was Dr. Charles Stuart, M.D., with whom the Violettas originated in 1887), and reading (p. 107) that it could not be found in any book, and failing myself to find any support for the name S. lanata var. Stuartii, or record of a Willow having been named after Dr. Charles Stuart, in spite of diligent search, the possibility occurred to me that someone, trusting to memory, had made a mistake. Hence my reason for giving the dedication of a plant to the Rev. Dr. John Stuart of Luss, Dumbartonshire, by the greatest of all Salicologists, Sir J. E. Smith, then President of the Linnean Society, so long ago as the first edition of *Eng. Bot.* This dedication should have priority over any other, if there were one. My reason for writing "should the plant prove to be this hybrid from Aberdeenshire," and expressing the hope that it would receive an authentic name, is—one is a hybrid, while the other is given as a variety. *J. Blades, University Botanic Garden, Cambridge.*

The Sweetest-scented Flower.—In consequence of a recent debate with a friend, I would like to hear the opinions of your readers, as to what popular plant or flower they consider has the sweetest scent. Of course, as we found, this opens up a tremendous field for argument. Naturally, different people hold different views, and unless a person is specially keen on any one subject, he will find it hard to name a favourite. Personally, I think the Lily-of-the-Valley would head the poll, but the vine, when in flower, is a serious rival. Violets, Roses, Stocks, Lilacs, Wallflowers, Primroses, Sweet Peas, Genistas, Lupins, Hyacinths and Narcissi, to quote but a few, all have claims. No doubt this subject has been discussed times without number, and I would be interested to know what decisions were arrived at. *R. Kemp.*

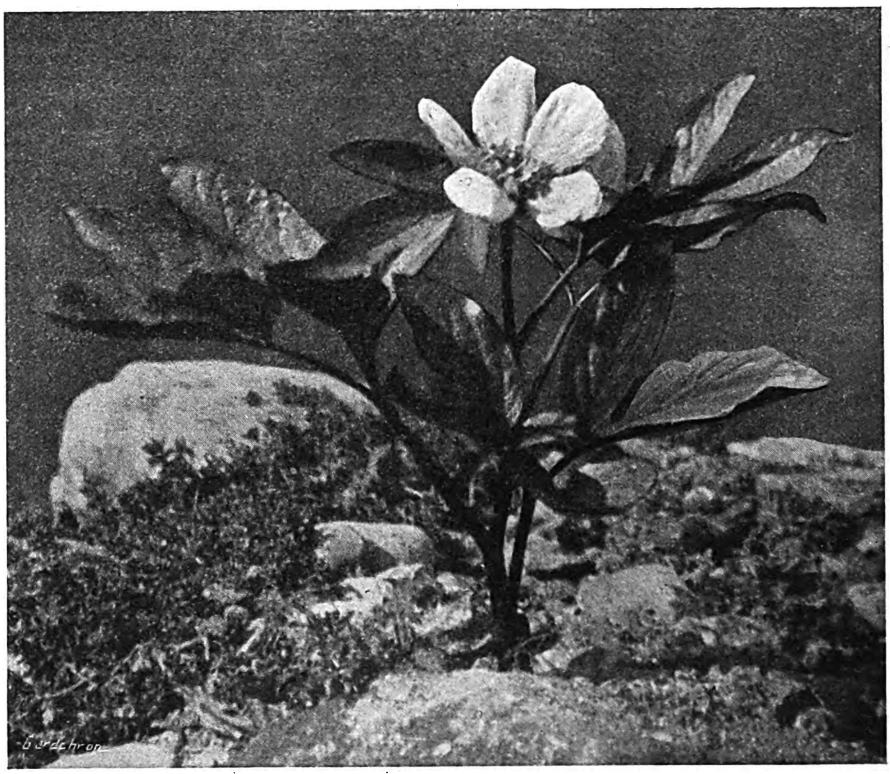

FIG. 185.—PAEONIA CAMBESSEDESII.

FOREIGN CORRESPONDENCE.

BAECKEA FRUTESCENS.

THIS graceful, evergreen Myrtaceous tree with Heath-like flowers and foliage, is found at altitudes of 3,000 to 5,000 feet, in the Malay Peninsula. The branches are wiry and droop after the fashion of a Weeping Willow. The leaves are about half-an-inch long, very narrow and acute, and the small flowers, borne on short pedicels, are white, with a green ring in the centre.

The dried leaves of this subject are stated to contain properties useful for the treatment of fever, and for this purpose they are sold in the Malayan markets.

B. frutescens appears to succeed in all types of soil, so long as it is of an open nature, and propagation is effected by seeds, cuttings or suckers. *F. S. Banfield, F.L.S., Malaya.*

ROSA GIGANTEA.

APROPOS of the flowering of Rosa gigantea at Cambridge Botanic Garden (p. 288), I well remember having seen this Rose in flower in 1916, but somewhat later in the season, I believe. Three buds opened then, and the large flowers, not unlike those of the cultivated single variety, Mrs. Oakley Fisher, but of a paler shade of colour, developed towards mid-day a faint honey scent.

As one who had the privilege to work in the various departments of this large and well-kept garden under the direction of the much esteemed Mr. R. Irwin Lynch, V.M.H., I cannot fail to be interested in what happens there, as was the case some time ago with the flowering of Clusia grandiflora. *A. R. Lugeon, Morges, Switzerland.*

PUDLIC PARKS AND GARDENS.

MERTON and Morden Urban District Council has decided to buy, for £6,000, sixteen acres of the Ravensbury Manor Estate, a stretch of pasture and woodland on the banks of the River Wandle, to preserve it from the builder. Ravensbury Manor was recently sold for building purposes. The land purchased by the Council will continue the green belt formed by the Watermeads, the National Trust Property which it adjoins. The Council expects to secure a substantial contribution from the Mitcham Council, in whose area most of the estate lies, and also from national bodies.

THE Middlesex County Council has agreed to contribute £1,490 towards the cost of the acquisition by the Wealdstone Urban District Council of land at Kenton for an open space.

BRIGHTON Town Council proposes to spend £5,000 on converting The Level, a large open space in the centre of the town, into a playing ground for the poor children who live in the district. A large boating pool is included in the scheme.

SOCIETIES.

CARDIFF GARDENERS'.

The first of the monthly Saturday afternoon outings of this Society took place on May 4, when a large number of members visited The Cottrells, the beautiful residence of The Mackintosh of Mackintosh, which stands amid lovely surroundings in the Vale of Glamorgan. The party was conducted around the gardens by the gardener, Mr. G. Thompson, who spared no effort in pointing out the chief features in the various departments. Many losses as a result of the severe winter were noted. Some of the Magnolias, however, were very striking, and the Daffodils also called for admiration for, although many were past their best, there were plenty to hold the interest of the members for some considerable time.

In the kitchen and fruit gardens everything, although backward, looked promising and well cared for. In the glasshouses there was a great deal to attract attention, a magnificent collection of Schizanthuses being much admired. Many of the old-fashioned stove and other greenhouse plants, now uncommon, were found to be flourishing under the care of Mr. Thompson and his staff. Although Grapes are not grown at The Cottrells, there were plenty of Peach and Nectarine trees under glass, all carrying excellent crops of fruits.

At the close of the visit, Mr. J. E. Turner, J.P., a Vice-President of the Association, proposed a hearty vote of thanks to The Mackintosh of Mackintosh, and also to Mr. Thompson.

PARKS AND BOTANIC GARDENS SUPERINTENDENTS.

The first Annual Meeting of the North-western Branch of the Association of Parks and Botanic Gardens Superintendents was held in the Town Hall, Manchester, in late April, and was attended by over thirty members from various towns in the district. Mr. M. Morgan (Crewe) occupied the chair, and an apology for absence, owing to indisposition, was received from the President of the Association, Mr. W. W. Pettigrew. The Branch Secretary's report of the proceedings covering the period since the formation of the Branch in November, 1927, and which had been circulated to all the members previous to the meeting, was approved and adopted.

The Chairman, in his address, eulogised the work of the President and General Secretary of the Association in connection with the formation and progress of the branch, and stated that the measure of success attained had been largely due to their efforts. Mr. M. Morgan was unanimously re-elected Chairman for the ensuing year, and Mr. J. Richardson (Salford) was elected Branch Secretary.

The following members were appointed to serve on the Committee, :—Mr. T. Bent (Bolton), Mr. E. Winsor (Blackburn), Mr. S. Turner (Stalybridge), Mr. G. Mottram (Oldham), Messrs. J. J. Graham and J. J. Mackintosh (Manchester), and Mr. J. Holland (Chadderton).

On the invitation of Mr. Winsor, it was decided that arrangements be made for the members to visit several of the Blackburn Parks on September 14 next.

At the conclusion of the Annual Meeting, Mr. H. Abbott, Forestry Adviser to the Burnley Corporation, read a very interesting and instructive paper on "The Aesthetic Value of Trees." He urged the planting of trees in towns whenever possible, and emphasised the importance of removing dead and decaying branches from old trees, so as to prevent the spreading of fungus diseases to healthy specimens growing in the vicinity. He gave a very lucid description of the valuable work which had been carried out under his supervision at Towneley Park, Burnley, in the renovation of old trees.

He is of the opinion that public parks should be utilised to a greater extent for the planting and labelling of trees suitable to the neighbourhood, for the guidance of the citizens as to the best kinds to plant in their gardens. He also pointed out the value of trees planted in various positions; even scrubby trees growing on exposed positions have a great aesthetic value; and advocated that a free use should be made of trees in public parks for blotting out views of unsightly buildings. Trees to be planted near old mansions in parks should be in keeping with their surroundings.

Mr. Abbott emphasised the importance of allowing sufficient space between individual trees when planting an avenue, as the effect was often spoiled when the trees had been planted too closely together. Where special effects are desired, the planting scheme should receive careful consideration so that the effects be spread over so long a season as possible. He also described the methods adopted in continental nurseries in preparing standard trees for street and avenue planting.

Several members joined in the discussion after the lecture, and a vote of thanks was unanimously accorded to Mr. Abbott.

ANSWERS TO CORRESPONDENTS.

Beetroots Blackened.—*M. L. M.* The Beetroots are infected with the fungus Phoma betae, which causes heart-rot in Beet. The fungus passes from the foliage to the roots. The first symptom of attack is the premature wilting of foliage during August. All leaves showing signs of wilting at that season should be pulled off and burnt, before the fungus gains an entrance into the roots through the petioles. All affected roots should be burned on the hot ashes of a garden fire, or buried deeply, and should not be allowed to remain on the rubbish heap.

Carnations Diseased.—*J. M. P.* The Carnation foliage is affected by leaf-spot disease due to Septoria dianthi. Cut away and burn all dead shoots and remove foliage which shows any sign of black spots. Spray the plants with Bordeaux mixture, or dust them with green sulphur when the foliage is moist with dew.

Cockchafer Grub in Soil.—The grub sent for identification was the larva of the cockchafer, or Maybug, Melolontha vulgaris. It is a common pest in gardens, the larvae feeding voraciously on roots of most plants. When digging the soil, remove and destroy any of these grubs that are found.

Melon Diseased.—*A. T.* The Melon plant is infected by Verticillium wilt disease. The incidence of attack is increased by low and sudden falls in temperature and cold conditions of the border. Raising the temperature to above 75°, regulating the amount of air, closing down the house for about three hours in the middle of the day and reducing the amount of water in the borders, will tend to check the disease.

Name of Fruit.—*F. W. M.* Apple Annie Elizabeth.

Name of Plant.—*T. R.* Amelanchier canadensis.

Peaches Setting Badly.—*A. H.* We might have helped you more had you given detailed information in regard to the temperature maintained day and night in your Peach house up to the time of flowering and during that stage. A temperature ranging from 43° to 48° at night up to the time the trees come into bloom, is quite high enough, with 48° to 50° at night when in bloom, and 55° to 60° during bright, sunny days, with plenty of ventilation. Bees are undoubtedly good fertilisers, but should the weather be unfavourable, then artificial means should be adopted by lightly brushing over the flowers at noon with a rabbit's tail or camel-hair brush. The atmosphere should also be kept dry when the Peaches are in bloom, and the house should be freely ventilated on all favourable occasions, allowing a current of air at night if possible.

Softening Hard Water.—*P. E. K.* At least two methods for softening hard water are known. Some water holds salts of magnesia in solution. This will decompose common soap and form an insoluble stearite of lime or magnesia. This is not likely to be used for domestic purposes. Water that is made hard by carbonate of lime in solution can be softened by the addition of lime (CaO) suspended in the water in such quantity as to neutralise the carbonic acid, and the new combination is precipitated or falls to the bottom of the vessel as sediment, which is presumably separated from the clear water. This method is often adopted on a large scale in connection with reservoirs of water for drinking and domestic purposes generally. Such water could in no way be harmful to pot plants; indeed, it should be better for Heaths, Rhododendrons, Azaleas, etc., than hard water.

The House Fly.—*G. H. B.* Fumigants are not often used in dwelling-houses, although we have known sulphur to be burned for a variety of purposes, and we think it is worse than most or any of the fumigants used, since it will turn white woollen goods, such as flannel, of a yellowish hue. Any such in a room could be removed before fumigating it. We do not think there would be any discoloration of woodwork, paint or goods by vapourising XI All Nicotine insecticide in the house. This is done by placing some liquid or Nicotine cake in a saucer, supported by something, so that a spirit lamp could be placed under it and lighted. Doors and windows should be closed, and a wet cloth placed at the foot of any door to prevent the fumes from going into other rooms, if necessary. The smell of Nicotine might be considered disagreeable by some people; to us it is pleasant. After it has been kept in a house or room for two or three hours it can be dispelled by ventilation. To abate the nuisance of the house fly, it is important to keep the garden and surrounding of the house free from heaps of decaying vegetation, manure and other rubbish, in which the eggs of flies are hatched. Waste from the kitchen should be placed well away from the house.

Tulip Bulbs Diseased.—*D. H.* The Tulip bulbs you sent show severe infection with the disease known as Botrytis tulipae, which would appear to be becoming a serious menace to Tulips. For treatment, see a note on the same subject in our issue of April 13 (p. 286).

Tomato Plants Scorched.—*J. B.* The Tomato foliage shows signs of "scorch" due to the harmful fumes from the heating apparatus. There is no sign of damage by fungus. The tray of water surrounding the lamp is insufficient to eliminate the trouble, as the fumes are not absorbed by the water. Actively-growing plants are quickly damaged by the fumes from paraffin oil stoves.

Vines Mildewed.—*H. G.* The vine foliage is attacked by mildew caused by Oidium Tuckeri. Careful attention must be paid to ventilation so that all draughts are prevented; water the border with great care, particularly an outside border. Dust the foliage, after syringing, with green sulphur.

Communications Received.—A. G.—H. M.—G. H.—A. T. J.—J. P.—W. M.—G. B.—A. W.—A. O.—J. C.—F. J.—T. W. T.—H. C.—H. J. C.—A. E.

TRADE NOTES.

The exhibit arranged by Messrs. R. Wallace and Co., at the Rhododendron Show on April 30 and May 1 (see p. 337, May 4), was awarded the new Challenge Cup presented by Mr. Lionel de Rothschild, for the best exhibit in Classes 1–5. This is regarded as the premier award at the show.

Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle.*

THE
Gardeners' Chronicle

No. 2213.—*SATURDAY, MAY* 25, 1929.

CONTENTS.

Alpine garden—
  Incarvillea grandiflora var. brevipes 379
  Linum flavum ... 379
  Sedum Kirilowii var. rubrum 379
East Malling Research Station, annual report 372
Fruit garden—
  Apple blossom weevil, note on the ... 392
Glossiness in flowers... 393
Hippeastrum procerum 377
Hoeylaert, the Grape-growing industry at 373
Hoyt, Mrs. A. Sherman 372
Muscari Heavenly Blue at Kew 373
Obituary—
  Collins, John ... 394
  Harding, Albert ... 394
Rhododendron Association's Year Book ... 371
Scotland, garden notes from south-west ... 376
Scottish crops under glass 372
Scottish forestry commissioners, difficulties of 372
Snowdrops 377
Societies—
  Royal Gardeners' Orphan Fund ... 393
  Royal Horticultural —Chelsea Show... 382
Sodium chlorate as a weed-killer 371
Symbiosis between nodule organism and Leguminous plant, the 371
Tomato grading in Scotland 371
Trees and shrubs—
  Lindera Benzoin ... 381
  Viburnum Carlesii... 381
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 380
Week's work, the ... 374
Welsh garden, notes from a 376

ILLUSTRATIONS.

Chelsea Show, exhibits at 382, 383, 385, 387, 389, 391
Hippeastrum procerum 377, 378
Hoyt, Mrs. A. Sherman 372
Incarvillea grandiflora var. brevipes 379
Narcissus May Molony 373
Sedum Kirilowii var. rubrum 375
Ward's, Mr. F. Kingdon, tenth expedition in Asia, views of 380, 381

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 56·5°.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden. London. Wednesday, May 22, 10 a.m. (Greenwich time). Bar. 30. Temp. 65°. Weather Bright.

The Symbiosis between Nodule Organism and Leguminous Plant.

The broad facts of the relationship which subsists between the Leguminous plant and the "nodule organism" have long been known; and although custom is the victorious foe of admiration, the strangeness of the relationship between the green plant and the microbe must still impress the mind, unless it be most unimaginative, with wonder. The Leguminous plant grows like other green plants, from seed. The seedling, however, maintains its independent life for only a few days. Very soon it "takes up with" a bacterium which reaches it from the soil. The bacterium, settling on a root hair, increases in numbers with the prolificness common to bacteria, and the mass of descendants grows through the root hairs into the cortical cells of the root. There they take up their abode, stimulate the cells of the root to form irregular nodules or tubercles, and in their routine activities achieve what would seem impossible, namely, bring free nitrogen into combination with other elements—fix nitrogen, as we say—thereby making it available for the synthesis of proteins. Plant and microbe share the proceeds, although, needless to state, the Leguminous plant pays for the services rendered to it by its microbic lodger. From its ample store the Legume provides the nodule organism with sugar and mineral matter and receives in return proteins, or other organic nitrogen compounds. The fact, known since Roman times, that the crop following on a Legume benefits from the activity of its predecessor, received, with the discovery of the nodule organism and the infection of the Leguminous plant by that organism, a simple and sufficient explanation. But anyone who studies and reflects on the symbiotic relationship between Legume and nodule organism soon realises that there is much more to learn about it. Until recently, however, the study of the biological side of this symbiosis had not led to any very arresting conclusion. But now, the investigations of Mr. H. G. Thornton, of the Bacteriology Department of the Rothamsted Experimental Station,* have shed new light on this old problem. Mr. Thornton finds that the seedling Leguminous plant—he worked with Lucerne (Medicago sativa)—does not fall an inevitable victim to the nodule bacterium. For the first few days of seedling life the Lucerne plant, although growing in soil teeming with the nodule bacterium, remains uninfected. Not until it develops its first rough leaf does the seedling's immunity disappear. With the bursting of that leaf, however, a new chapter opens in the life of the Lucerne plant. Nodule bacteria settle down in its root hairs. Increasing rapidly, each bacterium forms a colony, the colony migrates by growing from the soil into the plant and henceforth lives and grows within that plant until death puts a term to the lodging and the lodger. Mr. Thornton naturally set himself to discover what this curious delay in infection should mean. He found that if young seedlings are grown with older ones—as evil communications corrupt good manners—so the presence of the elders leads to the precocious infection of the young. Hence, it would seem probable that with increasing age the Lucerne seedling excretes something from its root which attracts the nodule bacteria. Instead of growing freely through the soil, the bacterium settles down in the root hairs—that is the fatal step—the rest is easy. It grows into the plant and in so doing surrenders for ever its individual freedom. Experiments made with extracts of the soil-medium confirm the conclusion that the maturing root, at about the time the Lucerne plant is unfolding its first rough leaf, produces and excretes a substance which encourages rapid infection, and it may be supposed that were the plant not to produce this material, nitrogen fixing by the Leguminous plant would not take place; for, apparently, in the absence of this bait, the bacterial fish would not rise, and the Leguminous plant would be unable to land it!

Tomato Grading in Scotland.—After consultation with growers, and wholesale and retail traders, the Department of Agriculture for Scotland has prescribed grade designations to indicate the quality of Tomatos produced in Scotland in accordance with the provisions of the Agricultural Produce (Grading and Marketing) Act, 1928. The specifications of size and weight are as follows:—Large A.A., four to six fruits to 1 lb.; A.A., seven to nine; Medium A.A., ten to twelve; and Small A.A., thirteen to sixteen. Only one grade of Tomatos shall be packed in each package, and the fruits must be of the first quality—freshly picked and packed in sound condition, fully and uniformly coloured, round, smooth and unblemished. The Tomatos are to be packed in clean, sound, non-returnable, 12 lb. "chip" baskets, lined in the bottom with strong, dark blue paper, and on the sides with dark blue tissue paper. The grade designation mark is to consist of a map of Scotland in silhouette, bordered on the left by a design representing the Union Jack and on the right by a design representing the Cross of St. Andrew, and associated with the words "Produce of Scotland" and "Empire buying begins at home." The labels will vary in colour so as to clearly denote the grade to which they are applicable; thus the labels for Large A.A. will be white; for A.A., red; Medium A.A., blue; and Small A.A., yellow. The Department expresses the opinion that the adoption of the designations will assist Scottish growers, whosesalers and retailers, to market produce of such uniform quality as will lead to a substantial increase in the demand for Scottish Tomatos. The success of the scheme will largely depend on the confidence with which retailers will regard Scottish Tomatos sold under the National Mark.

Sodium chlorate as a Weed-killer.—The notes on the use of sodium chlorate as a weed-killer, in our issues for February 23 (p. 151), and April 20 (p. 298), have resulted in an interesting communication from Mr. Alfred Hill, B.Sc., of the Agricultural Chemistry Department, Marischal College, Aberdeen, who has also kindly sent us a reprint, from the *Scottish Journal of Agriculture*, Vol. XI, No. 2, April, 1928, of the report on trials of weed-killers on garden paths carried out at Craibstone, the Experimental Farm of the North of Scotland College of Agriculture. Mr. Hill points out that sodium chlorate was included in these trials since 1926 because, at about that time, proprietary weed-killers containing sodium chlorate as the active principle, were appearing on the market, although he believes that the substance had previously been applied with success on paths on the Continent, especially in Norway. At Craibstone, sodium chlorate, although it destroyed weeds growing on paths at the time of application, was found to encourage the growth of moss, and was therefore not recommended. On the other hand, copper sulphate proved very effective as a path weed-killer, provided the weather conditions at the time of, and following, the application were favourable.

Legacies to Gardeners.—The late Mr. I. Williams, of Wilderton, Branksome Park, Bournemouth, who died on March 5, left the sum of £500 to his gardener, Mr. John Caldwell, and £50 to his under-gardener, Mr. Arthur Foster, if respectively in his service at the time of his death. He also left instructions that the annuity of £40 to his former gardener, Mr. Jeremiah Best, be continued.—Mr. Obed C. Hawkes, of South Bank, Harborne Grove, Edgbaston, who died on February 10, left £100 to his gardener, Mr. J. T. Wrigley.

"The Gardeners Chronicle" Medal.—Our Medal, offered at the Cornwall Spring Flower Society's show, was won by Mr. James Allen, 35, River Street, Truro, for six kinds of hardy spring flowers.

Rhododendron Association's Year Book.—A floricultural association that is able to give its members a *Year Book* priced at 21s. is rather out of the ordinary, particularly as the publication is well worth the price, and admirably fulfils one of the objects of the Association, *i.e.*, "to encourage, improve and extend the study and cultivation of Rhododendrons by means of publications." This *Year Book* is of octavo size, strongly bound, and extends to no fewer than 163 pages. The "List of Rhododendron Species," prepared by the President, Mr. Lionel de Rothschild, is compiled from the garden point of view; the specific titles are explained, the series or sub-series is given, and the colour of the flowers; in the case of certain species some additional and useful information is added, such as height, habit, and degree of hardiness. Although based on Mr. Wilding's *Rhododendrons; Their Names and Addresses*—to which due indebtedness is acknowledged—it is a splendid piece of work, and extremely useful to shrub lovers in general, and Rhododendron lovers in particular. This is followed by a list of the "Series and Sub-series" in which botanists have arranged the various species, and a general description is given in each case, and this is made the more useful by the addition of a list of "Best species in every series and sub-series as known at present."

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* "The Rôle of the Young Lucerne Plant in Determining the Infection of the Root by the Nodule-forming Bacteria," by H. G. Thornton. *Proceedings of the Royal Society*, Ser. B. Vol. 104, No. B732, April 6, 1929. Printed by Harrison and Sons, 44-47, St. Martin's Lane, London; price 5s.

In the latter part of the book there are valuable articles on “Hints on the planting of Hybrid Rhododendrons,” by Mr. F. Gomer Waterer; “The Rhododendron Show of 1928,” by Mr. G. H. Johnstone; “Rhododendron Growing in Lime,” by Major F. C. Stern, who gives the experience gained in his garden at Highdown, Goring-by-Sea; “Noteworthy Rhododendron Species,” by Mr. H. White; “Hybrid Rhododendrons,” by Mr. R. W. Wallace; and “New Hybrid Rhododendrons,” by Messrs. C. B. van Nes and Sons. The *Year Book* concludes with a “List of Hybrid Rhododendrons,” compiled from the lists of the principal nurserymen. This is also a valuable compilation as the colours of the flowers are given, and the degree of hardiness indicated, while the early flowering varieties are specified as such; moreover, new Rhododendrons and those of the older ones still worth growing are marked with a star, and those known to have particular merit have two or even three stars against them. An important observation is that “it is hoped to arrange either a trial of new Rhododendrons in order to judge of their particular merits, or get indications from various members of the Association who happen to have these growing in their gardens, and any suggestions on these points will be welcomed.” We congratulate the Rhododendron Association upon its initial publication in which such an exalted standard has been set that we wonder whether it will be maintained in future issues. The Secretary of the Rhododendron Association is Mr. Gurney Wilson, Royal Horticultural Society, Vincent Square, Westminster.

Scottish Crops Under Glass.—In accordance with a request from the Scottish Horticultural Advisory Committee, the Department of Agriculture for Scotland has taken steps to obtain detailed information in respect of the area and production of crops from under glass in Scotland in 1928. In the schedule which has been distributed, growers are requested to state the amount and value of each crop, such as Grapes, Peaches, Tomatos, Cucumbers, flowers and vegetables, etc., separately, and to give the quantities in weight, preferably in hundredweights, while the value should represent as nearly as possible the amount received for the crop in the wholesale market, or, if sold on the spot, the price on the premises.

Chrysanthemum Congress at Béziers.—The twenty-ninth annual Congress of the French Chrysanthemum Society will be held this year at Béziers, from November 5 to 9, and will coincide with an international horticultural exhibition jointly organised by the local Chrysanthemum and horticultural societies. A number of questions of practical application will be discussed at the Congress, the exhibition will come in for a full share of attention, and the remainder of the time available to the visitors will be occupied in social activities and in excursions to places of interest in the neighbourhood.

Difficulties of Scottish Forestry Commissioners.—Although much has been, and is being, done in the afforestation of Scotland, the public conscience has been incredibly slow to awaken to the potentialities the Forestry Commissioners have in view. They are finding the task mapped out for them a herculean one. The great difficulty—and it may be stated a leading one—is to make landowners' sentiment overcome their cupidity. The great obstacle to tree-planting, which has proved insurmountable in the past, is the knowledge that others must reap where we sow, and hence the resources that might be applied to afforestation are spent in other directions where the yield is quick and the returns lucrative. Would that the advice of the sagacious Duke of Atholl, given to his son, Jock, decades ago—“Aye, keep stickin' in a tree, Jock, it'll be growin' when ye're sleepin' ”—had been followed in past years, then, indeed, Scotland at this day would have been the possessor of a vastly greater amount of natural wealth in the form of trees than is now the case. Centuries ago, Scotland was finely wooded, with sturdy, healthy Pines growing to heights which they cannot reach to-day. Changes of climate and water-level, household and industrial requirements, and the inhabitants' destructiveness, have all taken their toll from, and practically blotted out, the ancient Caledonian forests, and this, too, in spite of preventive efforts made since the twelfth century. It required a Great War for the people of this country to realise the terrible inadequacy of their home timber supplies, but even yet it is to be feared the public conscience has not been thoroughly aroused to the gravity of the situation.

Mrs. A. Sherman Hoyt.—The lady to whose enthusiasm and enterprise the large exhibit of Cacti and Succulent Plants at Chelsea Show has been possible, has a long and close association with horticulture in America. The exhibit at Chelsea is described and illustrated in the present issue; this display of Californian desert plants is, however, not a prentice's effort, for Mrs. Sherman Hoyt had a large exhibit at the New York International Spring Show in 1928, which was awarded the International Gold Medal and the Special Gold Medal of the Garden Club of America, while the Tacoma Garden Club, the Seattle Garden Club, and the Pasadena Garden Club each awarded Mrs. Hoyt a Gold Medal. The exhibit was presented to the New York Botanic Garden at the conclusion of the show. Mrs. Hoyt's second effort was made in connection with the Boston Centennial Spring Show at Massachusetts, entirely at her own expense; this was in three parts—a Desert Garden, Death Valley and Redwood Trees, with suitable scene-painting backgrounds to secure the proper “atmosphere” and perspective. This big exhibit was awarded the Old English Cup for the most educational exhibit in the Show; the Pennsylvania Horticultural Society's Gold Medal and the Grand Centennial Gold Medal. The Chelsea exhibit is therefore the third of its kind arranged by Mrs. Sherman Hoyt, and it is the largest and most comprehensive of the three, as it includes the whole of the Boston exhibit with the addition of a further car-load of rare desert plants. Mrs. Sherman Hoyt's generosity extends beyond the arrangement of a unique and educational display at Chelsea Show, for she has presented the exhibit to the Royal Gardens, Kew, free of all cost. No such exhibit has ever before been placed before the public in this country. The lady is State Chairman (California) of the Conservation Committee of the Garden Club of America; one of the founders and first Vice-President of the Cactus and Succulent Plant Society of America; a Fellow of the Pacific Geographic Society; and a founder and one of the organisers and trustees of the California Botanic Gardens, at Manderville Canyon, Los Angeles. Mrs. Sherman Hoyt has no trade interests to serve, and her only reason for expending so much time, labour and money on the Chelsea Show display is that she loves the desert plants of California and desires to show them in as natural conditions as possible to people who cannot see them in the desert—she brings the desert to them.

MRS. A. SHERMAN HOYT.

The Journal of the Society of Foresters of Great Britain.—Foresters and students of silviculture will welcome the publication of Vol. III, No. 1, of *Forestry*, the official journal of the Society of Foresters of Great Britain. It commences with a report of the Third British Empire Forestry Conference, which opened in Perth, Western Australia, on August 22, and concluded at Auckland, New Zealand, on October 23, 1928. Two articles of especial interest are “The Multiple Mycorrhizas of Trees,” by Mr. M. C. Rayner, and “Oak Mildew and its control in Forest Nurseries,” by Messrs. R. C. Woodward, J. S. L. Waldie, and H. M. Steven, and the publication contains much data of general value to foresters.

Spring Flower Show at Rotterdam.—The spring Horticultural Exhibition took place at Rotterdam, Holland, on April 24 and following days, and in spite of the difficulties caused by the extreme lateness of the season, following a severe and protracted winter, the show was a great success. It was held in the large “Nenijto” hall, which amply accommodated the numerous exhibits, and permitted of a free and artistic style of display. The opening ceremony was favoured by the presence of the Burgomaster, Mr. P. D. Fortuyn, and other notable people, and the Queen-Mother of Holland visited the show on the second day. The Silver Medal given by the Queen was awarded to a very fine group of decorative flowers and plants arranged by Mr. G. J. Bier, Nieuwerkerk, while that of the Queen-Mother was won by a Belgian firm, Messrs. Theo. Pauwels, of Meirelbeke, with a display of Orchids.

East Malling's Research Station's Annual Report.—This splendid publication* reflects great credit upon the staff of the East Malling Research Station, for in it are chronicled the results of their labours and investigations for the year 1928; results of real value to fruit-growers, not only of Kent, but of the whole British Empire, for the work carried out at East Malling has resulted in placing the station in the front rank of British agricultural research stations. The *Report* is divided into three distinct sections:—(1) “General Development and Activities”; (2) “The Farm”; and (3) “Brief Progress Report of Investigations and Summaries for Fruit-growers.” Under Section 1, it is announced that visitors and enquiries from overseas have increased rapidly in numbers, and the number of contacts with home-growers is also increasing; no building was done during the year, and no new acquisition of land has taken place, although existing accommodation is taxed to the utmost. The preliminary work on the survey of the fruit soils in Kent has been commenced, while forty papers on various pomological subjects were published during 1928. The postal advisory work also increased last year, the total number of queries dealt with being 1,218, compared with 1,028 for 1927; the greatest increase was in relation to fungus and insect troubles. The Section devoted to the farm deals with the yields of fruits, and prices realised, which were apparently satisfactory, although the Pear crop, for the third year in succession, was a complete failure. But it is Section 3 which will attract the interest of most readers, for it contains detailed accounts of the investigational work. “The Effects of Various Fruit-growing Practices on Fruit Quality and Market Value,” is dealt with by Mr. R. G. Hatton, the Director; Mr. N. H. Grubb presents a summary of Apple pruning experiments conducted at East Malling over several years, and he also contributes an informative article on "The Effects of Potash Fertilisers on Apple Trees." Mr. J. Amos presents a classification of Red Currant varieties which should prove of great value, as it is founded upon the comprehensive collection got together at the Station, while the progress reports on root-stock investigations, fruit thinning, etc., are also very instructive. In the portion devoted to entomology are two contributions by Mr. A. M. Massee, on "The Fruit Tree Red Spider," and "The Black Currant Gall Mite on Red Currants," respectively, subjects which, last year, received his special attention. The publication should prove very helpful to commercial and private fruit-growers alike, and reflects great credit on all who are responsible for its production.

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* *The Annual Report of the East Malling Research Station*, East Malling, Kent (April, 1929). Free to Associate Members; price to non-members, 3s. 6d., post free.

Rothamsted and Woburn Experimental Stations.—A cordial invitation is extended to horticultural and agricultural clubs and associations to inspect the experimental grounds at Rothamsted and Woburn during the coming summer. Mr. H. V. Garner, M.A. (Camb.), and Capt. E. H. Gregory will again be available for demonstration purposes, and the Director, Sir John Russell, will be pleased to arrange full details with organisations desirous of taking advantage of the invitation. If possible, arrangements for visits should be made beforehand, and requests should be addressed to the Secretary, Rothamsted Experimental Station, Harpenden.

Muscari Heavenly Blue at Kew.—This lovely spring flower is very effectively planted in the Arboretum, at Kew, as a groundwork to several large beds and borders of deciduous shrubs. The most effective display is on the north-east slope of King William's Mound, where thousands of flower spikes produce a wonderful effect among the Hamamelis. This attractive Grape Hyacinth from Trebizond increases rapidly in cultivated ground, forming large tufts that produce freely spikes up to eight or nine inches high, well furnished with globular bells of rich gentian-blue. The flowers are pleasingly fragrant and in a cool season, such as the present, last for five or six weeks in flower. Perhaps the most important item in their successful cultivation is not to lift and dry off the bulbs for any length of time. Left in the ground after the leaves die off, the period of rest is limited to four or five weeks, after which the young leaves are seen pushing through the soil again. The best time for lifting, dividing and replanting is about mid-summer, when growth is complete, and the leaves are dying off.

The Grape-growing Industry at Hoeylaert.—Hoeylaert, situated at the edge of the Soignes Forest, near Brussels, is the centre of the largest Grape-growing industry in the world. It is not, however, very old-established, the first vines having been grown there by the three Sohie brothers, the eldest of whom is still living at Brussels. They established their nursery in 1866, when they constructed the first of the glasshouses which now cover many square miles of ground. Not only Grapes are grown at Hoeylaert. It was found that during the first few years of the life of the vine, the leaves were sparse enough to admit of the entrance of light into the house, and many other subjects could profitably be grown, such as early salads, Tomatos, Strawberries, Melons and Cucumbers. It is still customary to adopt this economical plan when new houses are established, and in some years these "catch crops" are productive of considerable profits. At the present day there are, in Hoeylaert itself, nine thousand glasshouses, and in the adjacent districts a further twelve thousand; each house is usually twenty yards long and seven or eight yards wide, the height being between two and three yards. It was not until 1870 that the houses were heated, but the system then adopted, known as the Flemish system, is largely in use still. The varieties of Grapes chiefly grown are Frankenthal, Gros Colmar, Alicante, Foster's White Seedling, Gros Doré, Royal Emile, Royal Molenberg, Gradisca and Muscat of Alexandria. Five-eighths of the Grapes are exported to England, the remainder being sent chiefly to Germany, Holland, America, Scandinavia, France, Austria, Denmark, Ireland, Italy and Switzerland. The exports increase each the amount in 1928 being nearly three year. kilos (roughly six million pounds). million

Southport Flower Show.—The Schedule of Classes and Prizes arranged for the sixth annual flower show at Southport has been issued, and copies may be obtained from Mr. T. E. Wolstenholme, Town Hall, Southport. Over £4,000 is offered in cash prizes, trophies and medals, consequently prospective competitors will understand that liberal awards are made to successful exhibitors. Two special features of the Southport Show—to be held in Victoria Park, on August 28, 29 and 30—will be the exhibition of the British Gladiolus Society, and the Sweet Pea Show to be arranged by the *Daily News* with the assistance of Mr. A. C. Bartlett.' There are seventy-four classes for Gladioli and thirty-one for Sweet Peas. The Schedule of the Southport Show includes nearly three hundred classes.

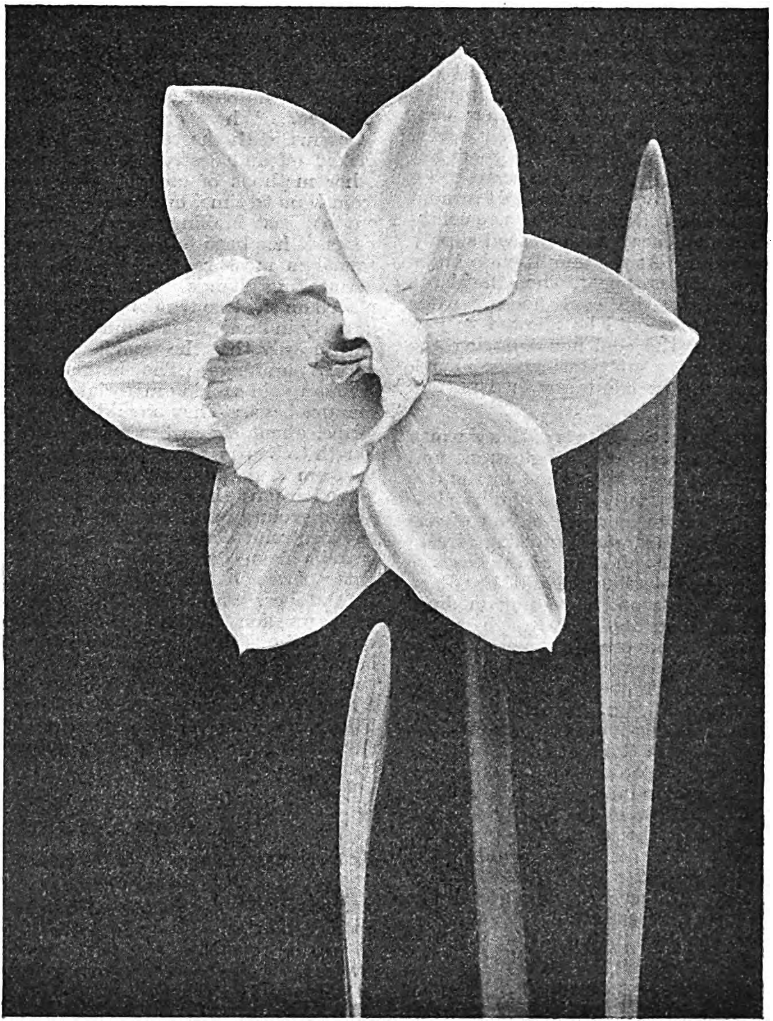

FIG. 186.—NARCISSUS MAY MOLONY.

R.H.S. Award of Merit, April 16; Award of Merit, Midland Daffodil Show, April 24. Flowers cream and primrose. Shown by Mr. Guy L. Wilson. (see pp. 300 and 334).

Early-flowering Chrysanthemum Trials.—The Horticultural Department of the Cheshire School of Agriculture, under the Superintendence of Mr. W. E. Shewell-Cooper, pays considerable attention to early-flowering Chrysanthemums. Last year, for instance, trials were carried out to test the effect of manuring, sterilisation of soil, and bacterized peat on Chrysanthemums. New varieties were also on trial, and a report thereon appeared in *The Gardeners' Chronicle* of February 9, p. 102. This year a trial of new outdoor-flowering varieties is being held and already there are over twenty new varieties entered for trial under typical northern conditions. If there are any growers who wish to include their new varieties or strains, they should send immediately not fewer than three plant of any one variety. The Horticultural Department is proposing to grow 8,000 plants in one trial or another. Further, this year a special series of trials is being held in the Baguley area, near Altrincham, on the flower farm of Mr. Harry Slerlock; thirty-two plots are being planned on the chequer-board system, and as the soil chosen is "poor," some definite results should accrue. The object is to find out some suitable substitute for the usual farmyard manure, as this fertiliser is becoming very scarce; 2,500 plants will be used in this trial. Visitors will be welcomed at both these trial grounds.

Appointments for the Ensuing Week.—TUESDAY, MAY 28: Royal West Renfrewshire Horticultural Society's show. SATURDAY, JUNE 1: Darwin and District Agricultural Association's exhibition; Leeds Paxton Society's Open Exhibition Night.

"Gardeners' Chronicle" Seventy-five Years Ago.—We beg to direct attention to the announcement in our advertising columns that in consequence of the Queen having been graciously pleased to name Saturday, June 10, as the day on which Her Majesty will open the Crystal Palace, the next meeting of the Horticultural Society at Chiswick, previously announced for the same day, will be held on Saturday, June 3, instead of Saturday, June 10. *Gard. Chron., May* 27, 1854.

Publications Received.—*Rock Gardens*, by A. Edwards; pp. 320, with eight coloured plates and other illustrations; Messrs. Ward Lock and Co., Ltd., Salisbury Square, E.C.4.; price 7s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Oncidium cheirophorum.—The new growths of this small, fragrant Oncidium, should now be well advanced. New roots are generally produced in quantity as the pseudo-bulbs begin to form, and just prior to this stage of growth is the best time for any necessary repotting, using well-drained pans and a compost of three parts A.1. fibre and one part chopped Sphagnum-moss; a little extra Sphagnum-moss may be used for surfacing. Damping off of the young growths after root disturbance may be avoided to a great extent if repotting is left until the growths are well-advanced, and if the plants, when potted, are placed under warmer conditions in the intermediate house for a few weeks, and watered very sparingly until the roots are well-established in the new compost, care being taken not to allow any moisture to collect around the pseudo-bulbs and growths. When re-established, the plants will need an increased supply of water at the roots. As the new pseudo-bulbs mature, the flower spikes appear, when the plants may be removed to the cool house. After flowering, the plants should be allowed to rest at the warm end of the cool house during the winter months, only sufficient water being afforded to keep the pseudo-bulbs in a normal condition.

Odontoglossum grande.—Plants of this warmth loving and large-flowered Odontoglossum, and of its varieties, that have been kept on the dry side since maturing their pseudo-bulbs last autumn, and are grown at the cool end of the intermediate house, are now growing freely and as new roots are just showing at the bases of the new growth, repotting should be done, using well-drained pots and a rooting medium of good Osmunda fibre, and a little Sphagnum-moss, which should be pressed firmly among the roots. Very little water will be needed until the flower scape is showing in the partly developed pseudo-bulb, but from this stage, provided the roots are active, ample supplies of water will be required at the roots each time the compost appears dry, in order to assist the plant to develop the pseudo-bulb and flower spike together. After the flowers are removed, every encouragement should be given the plants to assist the completion of the pseudo-bulb, a state generally reached a few weeks after the flowering period is over; when growth is complete drier conditions should be afforded, only sufficient moisture being given at rare intervals. Cultural conditions similar to the above are required by O. Insleayii and O. Schlieperianum. The plants should be examined for scale insects frequently, for these often attack this section of Odontoglossum and quickly spread from the pseudo-bulbs to the new growths, where considerable damage is done if the pests are allowed to remain; they should be washed off so soon as detected, using a small soft brush and sponge, and a weak insecticide. The foliage is easily damaged and disfigured if a strong solution of insecticide is used; unsightly spotting on the leaves will occur also if the plants are kept in a moist atmosphere and a low temperature.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

The Apple Blossom Weevil (Anthonomus pomorum).—The larvae of this insect causes considerable damage to the developing Apple blossom buds. The degree of damage depends very much, however, upon the weather conditions prevailing at the time of the blossoming of the tree. The pest is generally most destructive in cold and wet springs, when the blossom buds are long in opening, and not so severe when the weather is bright and open and the development of the buds more rapid. The larvae cannot live in an open blossom, and eggs are supposed to be rendered harmless by the expansion of the flower buds before they are hatched. Nearly the whole life cycle of this insect is spent upon, or near to, the tree. It is an adult weevil for eleven months, *i.e.*, from the June of the one year to the April or May of the next. The females, each of which is capable of laying from twenty to sixty eggs in as many blossoms, appear in April or May, select the most promising buds, and deposit a single egg in each, rarely more. These eggs hatch out in from five to seven days, and the grubs or larvae at once commence to feed upon the stamens of the flowers. The buds rarely open once the grubs have hatched, and the petals become brown and eventually dry up. The larvae change into chrysalids within the attacked blossoms, and at the end of about two weeks emerge as perfect weevils. For a short period the weevils feed upon the Apple foliage, but cause no serious damage, and finally they seek shelter until the following spring in cracks in the bark, or in rubbish at the base of the tree. Where practicable, all the attacked blossoms, with the tiny grubs inside, should be picked off and destroyed by burning. Various other methods of control have been advanced from time to time, but from experiments carried out at East Malling, Kent, over a number of years, it has been found that the Apple blossom weevil is most readily controlled by trapping in sacking bands. These bands should be placed on the tree trunks towards the end of May or early in June, as it is during the latter month and in July that the weevils seek shelter in the largest numbers. The bands may be made from any old sacking material such as discarded manure bags. They should be cut up into long strips, about six inches wide, each of sufficient length to be passed twice around the tree trunk to form a double thickness of sacking. It is placed around the stem at about eighteen inches above ground level, and tied once only at about the centre, to allow the free entrance of the weevils from above and below. The weevils enter these bands, which may be removed in October, when the weevils are in a state of hibernation. Where grease-banding is carried out, it should be concluded before the sacking is removed, so that should any weevils drop off the sacking they may be caught in the grease-bands on attempting to climb the tree again. The bands, with the weevils attached, should be subjected to boiling, as cold water has proved to be ineffective.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Spring Bedding Plants.—Those who practice spring bedding to any extent will now require to make provision for next season's display by sowing seeds of various plants required. Wallflowers, Myosotis alpestris var. Queen Victoria and M. a. var. Royal Blue should be sown towards the end of the month; Erysimums and Daisies in early June, also the various so-called winter-flowering Pansies. These may be had in distinct colours and come fairly true from seeds. Sow thinly and do not transplant the seedlings into rich ground, which is conducive to soft, flabby growth, and susceptibility to frost during winter. They should be grown in an open, airy, sunny position during summer, where they will make hard, sturdy plants. When good strains of Polyanthuses and Primroses are grown for spring bedding, it is often desirable to retain the best forms for future use, rather than depend on raising them annually from seeds. Where this method is practised the plants should be lifted immediately they are past their best, divided into single crowns and planted in nursery lines in a shady border, preferably with a northern aspect, where they can be kept moist and cool during the summer. Seedlings of Polyanthuses sown during February and pricked out in boxes, are now sufficiently advanced to be transferred to nursery lines; these, with good treatment, will make ideal plants by early autumn for furnishing the flower beds by the time the summer occupants are past their best. Other plants for the same purpose which may be increased by division this month, include many of the alpine Phloxes and the early-flowering Saxifrages. Of the former, the varieties Vivid and Sprite are very useful. They are easily increased by division immediately they pass out of bloom; cuttings also root freely if placed under a bell-glass or in a frame of sandy soil, in shade. These Phloxes flower later than many other spring flowering plants and, where used for carpeting, should only be planted in positions which will be the last required for summer bedding. Various mossy Saxifrages are useful for borders and edging, and should be lifted and divided so soon as they finish flowering; tufts of two or three green shoots will make nice plants by autumn if planted in nursery lines in a cool, moist soil. Aubrietias resent division at this season, and the better system is to have a reserve supply which can be divided in March for planting in their flowering quarters during autumn. The same applies to the double form of Arabis, but it may be increased readily by cuttings under a bell-glass; the pink Arabis known as Taplow Rose is an attractive plant of satisfactory colouring.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Forced Figs.—The first crop of Figs will now be ripe or approaching that stage, and syringing should be done sparingly, especially on dull days when a free circulation of fresh air cannot be maintained. Syringing, however, cannot be dispensed with entirely, as early Figs ripen in batches. The second crop is now well advanced and the fruits should be kept swelling by the aid of atmospheric moisture, fire-heat being necessary. A sharp watch must be kept on external conditions, and when the day promises to be fine, copious syringings of walls, stems and foliage, wherever this can be done without wetting the ripening fruits, should be practised. Afternoon syringing should be done cautiously, but every opportunity should always be grasped, after the ripe Figs have been picked, to syringe the plants. These remarks apply to light, well-ventilated houses, subject to aridity and red spider; shaded houses, where growth is strong may require much drier treatment. The supply of tepid water at the roots should be generous, and a fairly high temperature maintained, this being regulated by day and night ventilation. Shoots which have been tied back to let in light may be rearranged and possibly stopped, but it is not good practice, unless the shoots are gross, to stop them much in advance of the second crop, as the production of the first crop in the ensuing year depends much upon having growth tips thoroughly ripened.

Successional Fig Houses.—Trees started after the turn of the year will now come on quickly, and will withstand almost any amount of heat, with a proportionate supply of air and moisture. It is never wise to force growth too hard at night, especially when the Figs are in flower, but once this stage is passed, and if the roots are confined to warm, inside borders, a minimum of 70° will do them no harm. If trained on the long-shoot system, each growth should have plenty of room; the house should be syringed regularly twice on fine days, and once on dull days, for, much as the Fig likes moisture, the leaves should always become dry before nightfall. Every advantage should be taken to push the trees forward by early closing to trap the sun-heat in cold houses, where only one crop can be secured. So soon as early pot trees are cleared of their second crop, and if they are intended for forcing next season, they should be well fed with warm, diluted liquid manure in preference to being repotted, the main requirements being pot-bound balls of root fibres and abundance of short spurs showing embryo fruits. Some stopping will have been necessary to maintain a proper balance, but secondary growths will have plenty of time to ripen, especially if the roots are kept confined to the pots. They should be kept clean be copious syringings, and later, when summer heat prevails, plenty of fresh air should by admitted to ripen the young points.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Liliums.—Stem-rooting Lilies in pots will require close attention with regard to top-dressing, which, if not applied, will result in the plants being under nourished. The soil for top-dressing may be of slightly richer quality than that in which the bulbs were started, some well-decayed manure, passed through a fine sieve, being incorporated with it. To obtain the best results, avoid coddling the plants, but at the same time do not subject them to cold draughts. Liliums require an abundance of water during their growing season. Green fly should be watched for and checked so soon as it appears, or injury to the tips of the growths and the flower buds will result; to avoid this, spray periodically with a suitable insecticide.

Cinerarias.—Where it is desirable to have an early batch of Cinerarias the seeds should be sown without delay. Sow them thinly in well drained pans and stand the pans in a cool greenhouse. Cineraria seeds germinate very quickly; the young plants should be pricked off so soon as they can be handled and grown under the coolest conditions possible.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER, Knowle Gardens, Dunster, Somerset.

Salads.—To maintain a constant supply of Lettuces, Radishes, etc., during the early part of the season, it is absolutely necessary to have the aid of cold frames, but from now onwards most salads may be raised in the open. On light soils, and during the hottest part of the year, more satisfactory results will be obtained if the seeds of Lettuce are sown thinly so that thinning of the seedlings will be reduced to a minimum and transplanting dispensed with.

Thinning Seedlings.—Seedlings of Parsnips, Onions, Carrots, Beet, etc., should be thinned as each successive batch becomes sufficiently well developed, choosing showery weather for such work if possible. No hard and fast rule can be given respecting such work, as it is entirely a matter of thinning to suit the crop's and the grower's requirements.

Dwarf Beans.—A few rows of dwarf Beans may be sown, the varieties Canadian Wonder and Sutton's Prince being suitable, on a sunny border. The main sowing, however, should not be made until the end of the month or the first week in June; sow the seeds in rows eighteen inches apart and thin the seedlings to fourteen or eighteen inches from plant to plant; over-crowding should be guarded against as this hinders the development of the plants and results in the under-development of a great many pods.

Peas.—Early Peas which were started in boxes and transferred to the open border are now coming into flower, therefore they should be examined at intervals in case they become dry at the roots, when they should be soaked with water that has been warmed by exposure to the sun. Further sowings of maincrop varieties should be proceeded with.

Onions.—Hoe between the rows of Onions to destroy weeds and promote healthy growth. If plenty of cow manure is available, a mulching of that material should be applied along the rows in dry weather. Onions need plenty of moisture at the roots and they should be sprayed overhead if dry weather prevails during the evenings.

Runner Beans.—Where trenches for these were prepared some time ago, seeds may be sown directly into them. Seedlings from earlier sowings in boxes will now be ready for planting out-of-doors, if they have been hardened off thoroughly.

Brassicas. — Seedling Brussels Sprouts, Cabbages, Cauliflowers, and Kales, for early use are now well hardened and ready for planting in their permanent quarters. See that the ground receives a dressing of vaporite or sterolena, well worked in, before planting is done, to ward off the Cabbage fly larvae and leather jackets, which often prove troublesome, especially in dry seasons.

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq., Rosemont, Monkton, Ayrshire.

Vegetables.—Regular sowings of salads, purple-topped and white Turnips, should be made. Swede Turnips should also be sown at an early date, in the most open and airy part of the garden and allowed plenty of room, twenty-four inches at least, between the rows. Thin the seedlings when large enough to twelve inches apart in the rows. These are subject to attack by what is known as the Turnip fly, but frequent dustings with dry soot will prevent this trouble, and as the attacks occur at an early stage, means should be taken to guard against them. Thin Asparagus seedlings in the permanent beds to six inches, and at a later date to at least twelve inches. Onions, if sown as suggested earlier, should not require thinning, but if they were sown thickly they should be carefully thinned so soon as possible; the practice of leaving them until large enough for use in salads, etc., has nothing to recommend it, especially where Onion fly is troublesome, and a separate batch of Onions should be grown specially for the production of such produce. After disturbance, such as occasioned by thinning, sheep dip, naphthalene or any other approved specific should be applied to ward off the Onion fly.

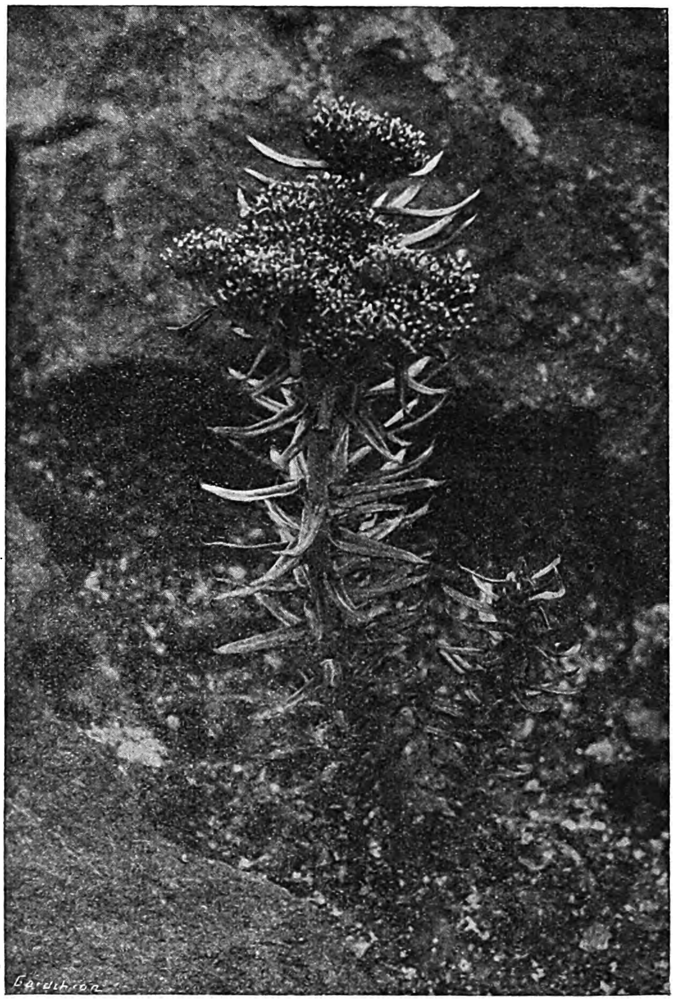

FIG. 187.—SEDUM KIRILOWII VAR. RUBRUM.
(see p. 379).

Strawberries.—Where mulching with short litter has not been carried out, the beds should now be dressed with straw or dried grass before the fruits swell so that they are prevented from coming into contact with the ground; all weeds should be carefully removed and the ground levelled with a Dutch hoe before applying the mulch.

Cherries.—After having set their fruits, the trees should receive a thorough drenching to wash away all unset fruits, and should black fly make its appearance on the tips of the young shoots, spray at once with orchard spray fluid or another approved wash. Apply a dressing of artificial manure and water it in well, or give a good soaking with manure water when the ground is wet, during, or immediately after, rain. Stop all unwanted growths at the fifth leaf.

Nerines.—These subjects having now finished growth, water should be withheld entirely, and the plants placed in a frame or house in full sunshine so that the bulbs may become thoroughly ripened; this treatment should continue until the flower spikes appear.

Herbaceous Plants.—These are now growing rapidly, and should be loosely, but securely secured to stakes, removing all weakly shoots and leaving the centres of the clumps open. Hoe around the plants frequently and, as the early-flowering subjects, such as Polyanthuses, Primroses, Auriculas, Pulmonarias, etc., pass out of flower, lift and divide them, and then replant in fresh soil.

NOTES FROM A WELSH GARDEN.

Although spring is a comparatively colourless season by the waterside, several bog, or semi-bog, plants were in flower before mid-May. The excellent Primula involucrata followed closely on the heels of P. rosea. Then came P. chionantha, very distinguished with its marble-white flowers and pale yellow buds in a setting of almost black sepals, the whole being dusted with a golden meal. Another white-flowered plant, at the edge of the water, is Caltha rotundifolia, whose many-rayed, star-like blossoms rival those of a colony of Sanguinaria canadensis glittering on rather higher ground close by. Also in moist, but not wet, soil, is a brace of interesting, dwarf Ericaceous shrubs, Phyllodoce coerulea and Cassiope Mertensiana, both in flower. That pretty weed, Rubus arcticus, is rambling about with quantities of bright rosy blossoms where Gentian verna is showing the first of its blooms. Some Dodecatheons have fired one or two early rockets here, and the fresh rose-pink flower clusters of Androsace geraniifolia are cropping up to remind one that this particular "mother of thousands" will not relax its determination to possess the earth until the last days of autumn. Nevertheless, this is an engaging and cheerful little sinner, and it affords a bright example to the half-hearted A. carnea var. Laggeri, hard-by, whose dark cushions were never more than feebly studded with its yellow-eyed, pink flowers. Contrary to expectations, Parochetus communis came through the winter so well in the cool, moist soil near the water that by the first week of May it had not only covered its sapless-looking stems with fresh green, but had produced several blooms. This, of course, means that we shall have an unbroken succession of these brilliant, gentian-blue Pea-flowers for a full six months.

The most notable occupant of this well-raised waterside bank is a Saxifrage that was sent to me by Sir Herbert Maxwell and named Monreith Seedling. The foliage of this fine plant somewhat resembles that of S. bathoniensis, the leaves being rather more finely cut. The stems, which attain the height of one foot, are very sturdy and a deep blood-red. Each of these bears about a dozen blooms which, a vivid ruby in the bud, open to a rose-pink, rich and vivid. The first flowers are nearly an inch across, and their striking colour is accentuated by an eye and veining of bright crimson. The generous donor would be able to give a more accurate colour description than I have done of this very attractive Saxifrage. It is a plant that stands out with singular distinction in an average amateur's collection of its class, and its colour is of an unusually fast dye.

In the rock garden a very choice little Crucifer with flowers of a singularly rich and vivid yellow, on one-inch stems, bears the name of Erysimum gelidum, and I believe it is Mr. Ingwersen whom I have to thank for this dainty gem. Rivalling this in the intensity of its yellow, as well as in the diminutiveness of its stature, is that elfish atom, Viola biflora. V. cucullata var. alba is such a fine and hardy plant, and so free with its big, white flowers, that with me it always excels over the type. Veronica peduncularis, although one of the earliest of the Speedwells to flower, is practically an all-season plant, producing a multitude of pearly blossoms on six-inch sprays. It is soon followed by the familiar V. Teucrium var. dubia (prostrata) which, good as it is in all its forms, reaches its highest pitch of excellence in the Benjamin of the tribe, the adorable little V. T. var. d. nana. The latter may not be this treasure's legitimate name, and I suspect that the "alpinas" and "compactas" of the lists are all the same thing with, perhaps (who knows ?), a better claim to specific rank than some plants of that exalted plane.

Aquilegia flabellata, a diminutive form with nearly pure white flowers, is a little Columbine of much quality, the first of its race to flower this season. Some of the survivors among Primula Forrestii were in bloom before the middle of the month, and in the arid, stony soil, favoured by that well-bred but squeamish species, both Erodiums and Androsaces of the woolly sorts are doing uncommonly well. A sunny spring has also suited Daphne petraea, the wee bush carrying some thirty or forty of its exquisite blossoms. That charming plant, Polygala calcarea, is another which is expressing its approval of weather conditions. As for P. Vayredae, its crimson and yellow blooms have not been so brilliant a colour, nor yielded in such quantity, for many a day. Potetillan rupestris, rare as a native, looks very stately on the top of a dry retaining wall, its beautiful foliage and erect, honey-coloured stems of eighteen inches being surrounded by elegant flights of white flowers. Its microscopic Corsican representative, P. r. var. pygmaea, is not less charming in its own way. On a close-up ledge of meagre, stony soil, Armeria caespitosa is also very choice among the Lilliputs. This is not a plant easily wintered here, with the result that A. caespitosa × A. alpina seedlings of chosen colour often have to do the part of understudy for the real thing. Alyssum atlanticum is a silvery-leaved, yet hardy, trailer, with large, round clusters of rich yellow blooms of unusual substance, and from the same region comes Geranium atlanticum, its stiff, ten-inch stems terminating in heads of nodding, violet bells. Saxifraga Maweana I had for some years, but it was ever on the doubtful list. Since its departure, S. Wallacei has reigned in its stead, and it is questionable whether this fine hybrid of unknown origin has ever been excelled in its own colour. White-flowered mossy Saxifrages of imposing stature and distinguished for the amplitude of their blooms and general heartiness we have in plenty—James Brenner, bathoniensis var. alba and others. But none of these seems to reach that degree of merit attained by "the grandest of our Mossies," which was Farrer's unqualified opinion of S. Wallacei.

The least of the tribe of Helianthemum, H. serpyllifolium of the lists, was the first to flower, its neat, little pads of green being studded with golden buttons early in May. But the white-flowered H. umbellatum was only a few days later, and to the credit of this excellent shrub must be added the fact that it survived last winter in places where many of the hybrids were lost. Some delightful possibilities in colour-blending are suggested by one or two accidental groupings which have occurred by using the blue, or lavender, dwarf Rhododendrons with such yellow-flowering shrubs as the small Berberis Darwinii and B. stenophylla hybrids, or such rock garden Brooms as Cytisus Beanii, C. decumbens, Genista pilosa, G. glabrescens and others. It may be that conditions which will suit these little Brooms are not always what one would select for the Rhododendrons. But in this part of the country, at any rate, each race allows one to exercise so much latitude as regards soil and situation that they grow within hand-shake of one another with admirable results. These little Brooms are all so good that one hesitates to indulge in comparisons. But, all things considered, C. Beanii is a shrublet which has no rivals among any of its habit and stature. The earlier, C. Ardoinii, the seed-parent of the last-mentioned, also stands alone as a lowly rock garden Broom of the highest quality, but it seems to need a hotter, drier spot than any of the others named.

In open parts of the woodland some forms of Cytisus hirsutus have been first-rate since early April, the long, whippy wands wreathed with yellow flowers often stained with brown on the standard petal. Rhododendron Williamsianum has again been so injured in foliage and buds by quite light spring frosts that one begins to despair of ever regarding this attractive species as a good garden shrub. Forrest's form of R. racemosum, with bright rose flowers and a semi-prostrate habit, on the other hand, promises to be all that is desirable, and in passing, I would put in a word of praise for that old species, R. punctatum. There are scores of newer introductions which I would willingly discard in favour of this delightful shrub. But it is seldom seen these days, and even its vastly inferior offspring of the R. Wilsonii class are better known than it is. Almost as much might be written of R. Vaseyi, whose leafless branches are covered with lovely, clear pink blossoms. R. ledifolium, quite hardy here, even in such winters as the last, is incomparable in its own way, but a pale pink form, which I first saw in the magnificent Bodnant collection, is also a shrub of matchless beauty, and (I may add) of mysterious origin. *A. T. Johnson, Ro Wen, Conway, North Wales.*

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

In a recent note (April 13) on the effect of the past winter on vegetation, I included Olearia semidentata among shrubs that had escaped unhurt. At the time of writing, large plants of this choice species showed no trace of injury, their grey-green foliage remaining quite fresh. Since then, however, many branches in shrubs up to eight feet high have wilted and died back, the result, apparently, of the bark splitting. The bushes are not dead, and will recover from disfigurement. Olearia insignis has come through all right, and so has Berberidopsis corallina; but Feijoa Sellowiana has suffered severely, and many plants of Clianthus puniceus in this neighbourhood have been killed outright, including the fine specimen at Logan, which for many years past has sprawled over the roof of a garden shed, making a magnificent display when in flower.

Having made this amend for the error in my former note, may I express a doubt about the warning conveyed in an editorial paragraph on p. 319 to the effect that "it is only in the warmest parts of the country that Rhododendron campylocarpum can be grown with any real prospect of longevity." The climate of Edinburgh can scarcely be accounted as genial, yet there can be few, if any, larger specimens of this beautiful species in Britain than that which stands unprotected on a hill in the Botanic Gardens near the Regius Keeper's house, and is covered year after year with a profusion of its sulphur blossoms.

One more comment: In the article on "the Aftermath of Winter," on the same page 319, Cistus ladaniferus is mentioned as having withstood the cold unharmed. This is remarkable, if correct, for the true Gum Cistus is one of the least hardy species. C. cyprius, a much hardier hybrid between C. ladaniferus and C. laurifolius, often passes for C. ladaniferus; indeed, it was figured in the *Botanical Magazine*, t. 112, under that title. I cannot but suspect that this is the plant in question.

Bulbs sent to me by a generous friend under the name of Fritillaria tristis are about to flower in the open border; but I have searched all authorities at hand without finding any of the genus under that name. Will any kind reader put me on the track of it? Our native F. Meleagris deserves to be more frequently naturalised than is the custom. Both the dark-coloured and the white forms appear as beautiful drifts in the grass, requiring only to be planted in a suitable place, where they will increase liberally from self-sown seeds. I am not sure whether Fritillaries are rabbit-proof. Most of the Lily Order are distasteful to rabbits, which I have never known to molest Scilla, Funkia, Convallaria, Colchicum, Ornithogalum, Ruscus, Erythronium, Asphodelus or Allium, although they devour Grape Hyacinths and Tulips, and sometimes nibble the young shoots of Lilies.

None of the Fritillarias, methinks, equals F. pyrenaica in graceful form of blossom, which entitles that species to a place in the choicest collection of border plants. Let any amateur who has a swampy corner at his disposal plant therein Lysichitum camtschatcense, and forget all about it until next April, when he will receive an agreeable shock from the great golden spathes which will be shot forth, each enclosing a golden spadix. These, as they fade, will be followed by huge, fleshy leaves, and in the next spring by a colony of seedlings, which should be thinned out and the surplus carefully grown in boxes to increase the stock of a very desirable plant. In his *Bulb Book*, Mr. Weathers expresse a doubt whether Lysichitum would thrive in the open except "in the most congenial parts of the kingdom." That doubt may be dispelled by the fact that this Aroid grows heartily in Mr. F. R. S. Balfour's garden at Dawick, in Peebleshire, a cold district six hundred feet above the sea. Moreover, it has flowered as freely as ever here after a winter which has wrought so much mischief in most places.

In the admirable *Annual* of the Rhododendron Association, recently published, it is noted that Rhododendron aemulorum (which we are now bidden to speak of as R. mullotum) has not yet flowered in this country. A small plant of this species, having been planted in the wood when too young, was injured by frost. It was brought in and put in a frame to recover two years ago, and in March this year bore a single truss of intense scarlet flowers reminding one of R. fulgens. It will evidently prove a species of much merit. *Herbert Maxwell, Monreith.*

SNOWDROPS.

WHILE watching the behaviour of Snowdrop seeds, one or two points seem to have been made clear. These may be worth recording.

Mr. A. T. Johnson, writing from Ro Wen, North Wales (*Gard. Chron.*, March 30, 1929), states: "The Snowdrops in the woodland . . . are spreading abundantly by means of seeds in a ground covering of Ivy, about eight inches thick." The Ro Wen conditions appear to be very similar to mine here, where I first noticed seedlings on an Ivy-covered bank. Having lifted a few very small Snowdrop bulbs from this bank and found that they were undoubtedly seedlings, I decided to experiment with some seeds that had been sent to me in 1926 by various growers interested in the subject, both in England and Scotland. These, with others gathered here in 1926, were kept dry until July 21, 1927, and were then sown in lines, side by side with seeds gathered in May and June, 1927. In the spring of 1928 the results were very disappointing. From the 1926 seeds, seeds received from Cumberland produced one plant, and those from Ayrshire, two plants. None of the other 1926 seeds germinated in 1928. From seeds gathered here in May, 1927, one plant appeared, and from seeds gathered here a month later, two plants. Whether these plants were from seeds sown in July, 1927, or from stray seeds in the soil, I cannot state, and judged by 1929 results these six plants may possibly be ignored.

On examination of the lines during the spring and summer of 1928 the round, white seeds could be easily seen in the soil, lying in apparently the same condition as when sown. The ground was protected with wire-netting to secure the soil from disturbance by birds or otherwise. The result this spring has been very interesting. In only one line out of fourteen is there an entire failure. Why this should be, I cannot tell. The seeds which had failed were those of one of the 1926 lots gathered here. In all of the other thirteen lines there are seedlings—in some cases few—in others many.

In the two lines sown with seeds gathered here in 1927, which produced in 1928 two plants and one plant, respectively, there are this season some hundreds of seedlings.

On examining the soil in the various lines, ungerminated seeds are to be seen, apparently unchanged. Some of these have been microscopically examined for me at Edinburgh Royal Botanic Garden, and I am told that they contain good embryos and that there does not appear to be any adequate reason why they should not germinate. It is possible that these seeds may be what are termed "hard" seeds, and they are being watched to see whether they will germinate in another season.

Examining the soil where seeds were sown in 1928, immediately after being gathered, I find that the seeds are still lying there ungerminated. The young plants may be looked for next spring.

Looking over my correspondence, I find that several keen gardeners have written me concerning their failure to germinate Snowdrop seeds. I hope they may be induced to try again, and with patience wait two seasons for the results, when, possibly, they may be able to throw further light on the subject. *P. Murray Thomson, Downshill, Hereford.*

HIPPEASTRUM PROCERUM.

THIS is the giant of the genus, and was introduced by the grandfather of the present M. Binot, about 1863, in which year it was described by Duchartre.

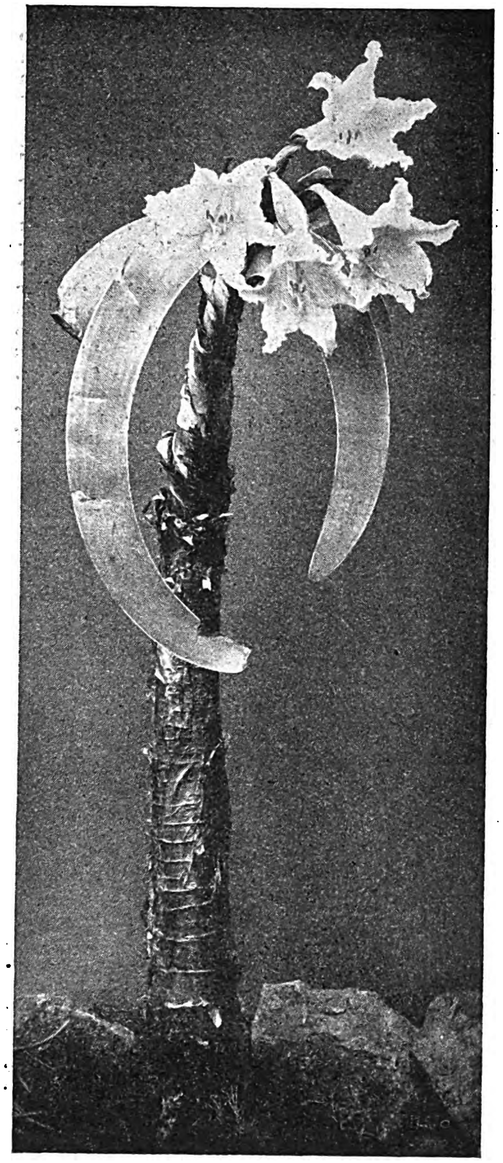

FIG. 188.—HIPPEASTRUM PROCERUM.

Some years ago I made a journey to Brazil for the express purpose of seeing this plant (Fig. 188) in its natural habitat, which is restricted to certain cliffs in the Organ Mountains. Although this was not an economic way of obtaining knowledge of how plants grow, I shall never regret this journey, for it took me through scenes of unrivalled beauty. My friend, the late P. M. Binot, who accompanied me on the expeditions in the mountains, and who possessed a unique knowledge of the flora of that part of Brazil, made my stay in these mountains days of *fiesta.* I collected twenty-seven bulbs, some of them five feet high, which flourished for several years in my garden, and were a source of great delight to many, especially to the late Mr. William Watson, who pressed me to write a monograph on this species. At the time, proposals were made by others for a more extended book on the Amaryllideae, so the monograph was not prepared, and ultimately both projects were abandoned. Growing on ledges, often but a foot wide, on the face of the cliffs, and with little foot-hold but the rock, heavy storms often fling hundreds of the great bulbs down the precipices. But they obtain some support from a species of rambling and trailing Philodendron which intertwines itself among the bulbs and their roots, and forms a kind of rope to hold them in their places. Hippeastrum procerum cannot be confused with any other member of the genus. Its bulb, foliage, and seeds are idiosyncratic, and the colour of its flowers is also distinct. In these respects it hangs on the very edges of the genus—like an appanage which cannot well be placed either in or out of the genus.

From the genetic point of view it should be granted generic rank of its own, for no one has succeeded in crossing it either way with any other species or garden form.* For a number of years, during which it bloomed regularly in my garden, I used its pollen on the large number of species and garden Hippeastrums which I then cultivated, and also attempted reverse crosses on every occasion. But never did fruit form. Not wishing to exhaust the vigour of my bulbs of H. procerum by raising self-pollenated fruits, I only twice self-pollenated in order to examine the fruit and seed. On both occasions fertile seeds were produced and seedlings raised. Hence, it is clear that the failure to raise any hybrids or crosses was not due to improper cultural or climatic conditions, or to any inherent infertility.

Moreover, H. procerum is not the only Hippeastrum which clings to the rock walls of the Organ Mountains, for I also collected H. corriensis,† and H. organense growing with it; and H. aulicum, H. calyptratum and H. Kromeri grow at a lower level. H. reticulatum is found on the low ground. Yet there is no sign of any natural hybrid growing near H. procerum, or of any other species in any way related to it, or filling the gap between it and the rest of the genus Hippeastrum. But it is a fact that the distinctive Rhododendron-like, rosy markings on the outside of the flowers can also be traced, obscurely, on H. corriensis, and also on H. Kromeri. But colour imitation or similarity is no real guide to genetic affinity.

Among the Hippeastrums of this district which are epiphytal, I noticed H. organense and H. Kromeri on tree stumps above marshy ground. It is probable that other kinds may become epiphytic under such special conditions as exist in this district.

NOTES ON THE TERRAIN, CLIMATE AND VEGETATION, ETC., OF THE ORGAN MOUNTAINS.

The first Portuguese navigators thought that the Bay of Rio was the estuary of a river, hence the name "The River of January." After passing a mile or two of rich, littoral land, one reaches the mountains, which are clothed with secondary forest, above which great pillars of bare rock rise to about 4,000 feet or more. If there are still left small patches of primeval forest in this range it is only here and there in inaccessible places. When one reaches the rock above the forest lands, one looks down over a maze of countless valleys running in the wildest confusion in almost every direction. In the bottoms are farms and cultivated lands surrounded by a belt of forest on the steep mountain-sides and crowned by vertical pillars of bare rock, the lower lands running away in the distance down to the glittering waters of the bay. The intricate nature of the terrain paralyses the eye. One feels that one would have to remain in the same place for an hour before the eye could have travelled but once over the many details of the panorama. From an ecstatic condition one is dragged back by a warning that there will be a thunderstorm about four o'clock. However, somewhat similar scenes recur from practically every prominence. But the traveller regrets that he was not so constructed that he could divide himself into two parts, one of which could just look, and the other part hunt for plants.

Among these outstanding parallel pillars of rock there are five that can be seen from a great distance away over the bay; two being higher than the other three. Just before sunrise, when the bay and the lowlands are swathed in a faint mist, the sun suddenly strikes these five highest pillars of rock. By the Jesuit Fathers of those early days the scene was likened to a vast auditorium of worshippers over whom the hand of God was lifted in benediction. May no alleged civilisation ever desecrate this shrine!

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*Mr. James O'Brien, V.M.H., secured a single seed on H. procerum fertilised with H. reticulatum, and raised a seedling, but lost it in the second year of growth.

† Col. Fig. in *A Selection of Hexandrian Plants*, by Mrs. E. Bury. No. 9. This is the H. Reginae of some Brazilian writers. It is allied to H. organense.

The character of the rock upon which H procerum grows somewhat resembles a soft, porous granite. It is stated that true granite outcrops in places, but what I saw was all secondary rock, much of which had been metamorphosed, and belonged to the classification of *estrato cristalino* of Spanish geology. It has just sufficient roughness for roots to cling well even to plain surfaces of it, and would always give up some moisture at all seasons of the year.

The summer climate at the 3,000 feet level is very pleasant and equable, the day maxima being about 80°, and the night minima about 58°. In winter both are about 15° less, and ground frosts take place for an hour or two at sunrise, but are not serious, and do not descend below about the 2,500 feet level. On the summits of the mountains air frosts are stated to take place occasionally, but plants such as H. procerum, standing close against huge rock walls, would be secured, by the radiation of warmth from the rock, against anything short of a sharp wind-frost.

The winter season is dry, and long rainstorms are unusual in summer, but, although summer forenoons are typically brilliant, thunderstorms take place about every other evening. These break on the mountains round about 4 p.m., but often do not spread to the lowlands, and only last about two hours. Occasionally there is a great deluge, in which as much rain falls in three days as we get in six months. The air in summer is nearly saturated.

As to the plant life on these mountains. The trees are a special study which I would not attempt. But I gave a list, with notes, of eighty-eight species of plants and Ferns which I collected when on my visit. These will be found in *Journal* R.H.S., Vol. XXVIII, Parts 3 and 4.

As access cannot be obtained through the tangled growths on the mountain sides without cutting a path through the undergrowth, and as this is a slow process liable to take up the entire day, the native seeks to save time and labour by approaching the mountain on its steepest side and cutting the pathway up the steepest incline he can find. It would be base flattery to suggest that his scheme assists the explorer in reaching the summit of his ambitions, for the way is arduous and precipitous beyond measure. Moreover, the Indian native makes his passage high enough and wide enough for himself, but not for any fully-grown person. As a result, one has to crouch down, hands on knees, the whole time, and walk sideways as well. The foundation upon which one is supported, although it is invisible, is formed of rough boulders of rock with huge crevices and holes between them. On the top of this is a mattress, some feet in thickness, composed of various aerial roots, vines and trailing plants, the whole of which mattress sinks under foot in a few seconds, so that the art of walking cannot be exercised, but one must jump or run so as not to sink in. The ascent must therefore be made mostly by crawling in monkey fashion, and by clinging on and pulling oneself up by boughs and tree stems. And the descent must be made at a run with as few rolls-over as may be found convenient.

The passages through the Bamboo thickets are nearly in darkness and one longs for a breath of air in the stifling atmosphere.

I would note that, after passing through this forest belt, it was more than an hour before I could hold my hand-camera steadily enough to take a snap-shot.

The methods and objects of cutting pathways are interesting. There are few venomous snakes likely to be met with, but the anaconda is common, and grows to a great size. A chance meeting with a sleeping anaconda is likely to end disastrously for the wayfarer, for although not venomous, it has terrible teeth, and can swallow a wild pig. But it will never attack a man if it has time to glide away.

The various large rodents, wild pigs, etc., can only find their way through these tangled mountain sides by following a path that has recently been cut, and these become impassable in a couple of years. Hence, the anaconda curls himself up and lies in wait for his prey on one of these recently-cut passages. But if a new path is cut the very day the traveller is about to traverse it, he is pretty sure not to come across one. The native will not trust to this, but makes the welkin ring with his yells all the time he is clearing the way for you. No wonder that any chance sleeping anaconda wakes and departs in terror. As a result of these yells, we never caught sight of a snake of any kind. Evidently the native of these parts knows his snake, and, when he kills one, he does not waste it, but eats it so soon as possible. Europeans who have tasted roast anaconda steak tell me that the meat, although rather too firm, is succulent, and resembles a big eel in flavour. In the interior of Brazil, a full-grown anaconda will supply food for a whole tribe of *bravos*, but in the Organ mountains there is not that great scarcity of food which one sometimes experiences in Matto Grosso.

In the forest belt, Sanchezia nobilis was common, both the plain and variegated-leaved forms, several Alstromerias, five or six species of Bamboo, and several Philodendrons.

But the most beautiful individual belonged to fauna—a small batrachian, perhaps an inch or more in length, brilliant orange all over, and shining like a jewel. Its peculiarity lies in a kind of helmet or shield covering the head. After several failures, I succeeded in getting live specimens of this frog home to the British Museum of Natural History. There were imperative physical reasons why I should have noticed batrachians rather than the hosts of epiphytic Bromeliads and butterflies which inhabit this forest zone—for I could never, while climbing, afford for one moment to take my eyes off the ground.

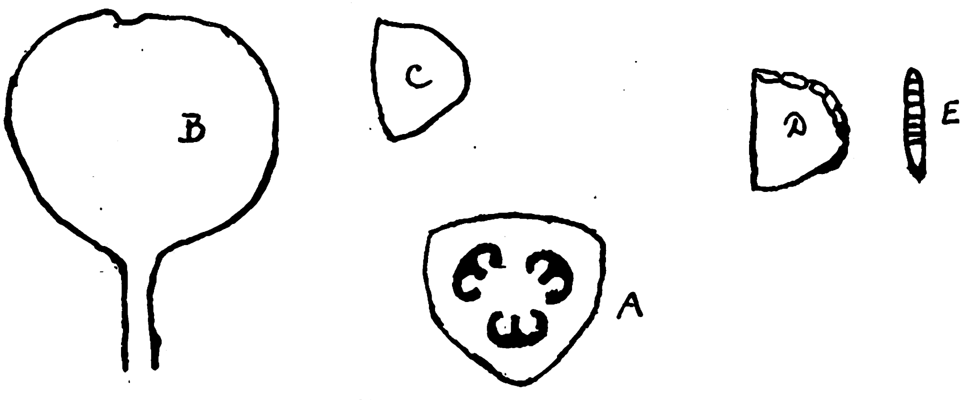

FIG. 189.—HIPPEASTRUM PROCERUM.
Fruit, Ovule and Seeds.

H. procerum, Duchartre.

Fig., in colours, in *Flore des Serres*, Vol. XX, t. 2077 and t. 2078; *Bot. Mag.*, t. 5,883; and also in *The Garden*, Vol. 45, p. 350; and in *Illus. Hort.*, Vol. XI, p. 408.

The first figure is very true, but all the figures I have seen portray the bulb in an erect posture which is not the pose which this plant affects in its natural habitat.

Bulb.—From two to five feet long, rooting on rock, and taking a stance varying from nearly horizontal to one of about 45° above the horizontal; evergreen; somewhat flexuose and ascending towards the apex; about three-and-a-half inches in diameter at base.

Leaves.—A dozen, distichous, falcate, depending vertically, slightly shorter than the bulb, two inches to two-and-three-eighths inches wide, strap-shaped, glaucous, dull emerald-green, with transparent, whitish to pink edges. Narrower-leaved forms are on record.

Scape.—Central, exceeding the bulb by about six inches, much compressed, bearing an umbel of about four* flowers opening in succession.

Valves.—Persistent during flowering, stiffly erect, six inches or less in height by one-and-a-half inch wide.

Pedicels.—Shorter than the valves, almost triangular in section.

Ovaries.— Small. Tube, very short.

Flowers.—All pointing in same direction,† scentless, mauve to intense bluish-mauve, with a white base. General coloration is like that of Griffinia hyacinthina (which is a common plant lower down the mountains). The segments are most deeply coloured towards their apices. The middle zone is lighter in colour, and is profusely spotted with small, reddish-purple spots, and the inner segments are, in this zone, curiously veined towards their edges with short, irregular, mauve markings. Exteriorly, the segments are copiously spotted and flushed with whitish and pink marks towards their bases, and keeled with green at their apices. Span, four-and-a-half to five inches. Limb, six inches.

Segments.—The three inner one-and-a-quarter inch wide, the three outer more than one inch, overlapping the inner. In some forms the segments are not so wide.

Stamens.—Contiguous, much shorter than the limb.

Pollen.—Light yellow.

Style. — Exceeding the stamens but shorter than the limb.

Stigma.—Tri-capitate, ciliate.

Fruit.—Dehiscing in five months, and containing forty-four or forty-five jet black, D-shaped seeds. These are much thicker than in other Hippeastrums, not at all winged, but very acutely angled, with all edges raised. The edges of seeds touching the outer envelope of the fruit are strangely marked (see Fig. 189), although the envelope itself is smooth. They show about six transverse marks or bars on their double edges.

Gestative Period.—About two-and-a-half times as long as is the case in other Hippeastrums.

In the fruits raised at Isleworth a good proportion of the seeds were fertile, and the seedlings grew well for two years, but slowly. Their appearance was true to type.

This plant will withstand temperatures down to the freezing point for a short time, but, being evergreen, it should not have its growth brought to a complete standstill by cold. It will grow in temperatures between 40° and 55°, and will expand its flowers fully at day temperatures of about 60°. In its natural habitat the temperatures at this period vary between 55° and 75°. The flowering period in the Organ mountains is January and February, corresponding to our July and August. March is the close of the flowering period (our September). Bulbs which I brought to Isleworth flowered with me in March the year after introduction, but three years later they flowered in August.

The cultivation of Hippeastrum procerum

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* I know nothing of the twelve-flowered scapes described by some authors, but the presence of six subsidiary bracts indicate the possibility of a six-flowered umbel, as shown in the Fig. in *Flore des Serres*.

† Away from the wall of rock and retaining this character under cultivation. Is this a case of "fixed heliotrophy"?

is full of difficulty. To succeed, one should construct a house in which an almost saturated atmosphere could be maintained, combined with a briskly moving air. This could only be obtained by the use of air-fans. Winter temperatures ranging from 40° to 55° should be arranged for, and, for summer, some 12° higher. No shading should be allowed excepting about midsummer, when it would sometimes be found necessary to prevent the sun from rushing the temperature above 80°.

The big bulbs must be supported at an angle of about 45° with the horizontal until they have obtained a firm root-hold on rock. With me, they did fairly well in nine-inch drain pipes filled with rock, charcoal and chippings of stone, covered with a little Oak-leaf and bits of live moss (not Sphagnum). Owing to the exposure of the roots, a constant war must be waged on wood-lice and such enemies. Any bulb planted in earth will certainly die in a year or so.

Description of Sketches of Fruit, Ovules and Seeds (Fig. 189).

A.—Section through middle of ovaries at time of flowering, showing position of ovules on placenta (slightly enlarged sketch).

B.—Life-size outline of ripe fruit containing forty-four to forty-five seeds.

C.—Life-size outline of seed.

D.—Life-size outline of seed showing bar-like marks on double edge of seed where contiguous to inner side of fruit-husk.

E.—Life-size end-elevation of seed, showing thickness of seed and same bar-like markings. *A. Worsley, Isleworth.*

ALPINE GARDEN.

INCARVILLEA GRANDIFLORA VAR. BREVIPES.

Hailing from the upper Lichiang valley, on the eastern slopes of the Lichiang range, north-west Yunnan, Incarvillea grandiflora (Franch) var. brevipes (Sprague) is well worth a position in a sunny situation in the rock garden, where its woody root-stock can penetrate far down into the cool soils beneath; for in its natural surroundings it is found on gritty exposed positions and on the open mountain meadows.

I. g. var. brevipes (Fig. 190) was described and given its varietal name by Mr. Sprague so long ago as 1909, in the *Kew Bulletin* of that year (p. 263). It was described from dried material collected by Mr. G. Forrest a few years earlier, and also from plants grown and exhibited by Messrs. Bees, Ltd., at the Temple Flower Show, under the name of I. Bonvalotii. The varietal name refers to the short pedicels, as compared with the true I. grandiflora.

I. g. brevipes is a luxuriant grower, the flower stems being seven to twenty inches in height, with two to seven leaves to the plant, dark green and pinnate, the segments of which are serrate and of varying lengths, with an acute apex; the terminal segments are suborbicular and much larger than the lateral segments, very often two inches in diameter, but this character is very variable. The petioles are from one to three inches in length and brownish-green in colour. The large, Gloxinia-like flowers of rich crimson colour are borne at the apex of single stems, in two or threes. The calyx is from half-an-inch to an inch in length and campanulate in shape, with five acute lobes. The corolla tubes are two to three inches in length, by two to three inches from tip to tip of the large, orbicular segments. The base and inside of the tube have a yellow flush, with white streaks, the latter persisting further on the inside lower half of the flower. The stamens, four in number, hardly reach the mouth of the tube, but the pistil is longer, and may be just discerned when looking into the throat of the corolla.

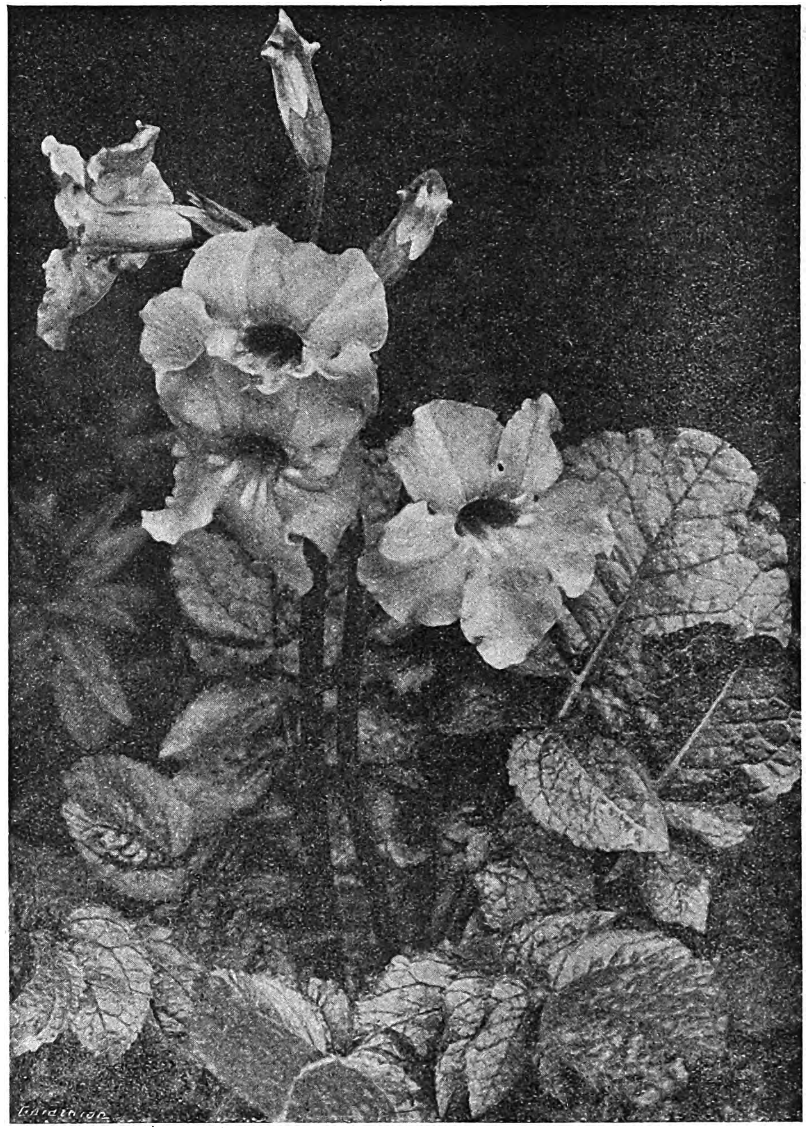

FIG. 190.—INCARVILLEA GRANDIFLORA VAR. BREVIPES.

SEDUM KIRILOWII VAR. RUBRUM.

Sedum Kirilowii var. rubrum (Fig. 187) is a charming though somewhat unusual type of plant, closely resembling in habit our native S. roseum. It is found in the mountains of central Asia. The plants at Kew appear to grow from eight to fifteen inches in height, throwing up their glabrous, green stems, stiffly erect, from woody rhizomes. The stems are a quarter-of-an-inch to half-an-inch in diameter, thickly clothed with bright green, linear leaves, nearly two inches in length by rather more than a quarter-of-an-inch in width, standing out horizontally from the stem, but with a slight upward tilt at their apex; they are slightly serrated.

The flower heads are of a brick-red colour, two to three inches across and arranged in a corymbose cyme. The individual flowers are roughly three-sixteenths-of-an-inch in diameter, with the petals and sepals about an eighth-of-an-inch long, from the base of which arise the stamens, these being about double the length of the petals and crowned with small golden anthers. The species appears to be dioecious, for in the female flowers the stigmas and styles are of the same colour as the petals, and they are not nearly so charming as the male flowers.

The plants like a fairly open, sunny position, though sheltered, where they can fix their roots firmly into well-drained, rich soil. *A. Edwards, Kew.*

LINUM FLAVUM.

One has some hesitation in stating that Linum flavum is the best of the few yellow Flaxes in cultivation, seeing that we have L. arboreum and a few others in our gardens, but it may well claim to be among those in the first rank, both for beauty and comparative hardiness. I state "comparative hardiness," as it is not absolutely reliable, even in less trying seasons than this has been. Happily, however, it sows itself with considerable freedom under favourable conditions, and young plants from self-sown seeds frequently survive when others fail. A few seeds may also be saved to maintain the stock. Given, however, a dry, sandy soil and a sunny position, the fear of loss will be greatly minimised.

Linum flavum is more herbaceous than shrubby and generally produces fresh growths from the base each spring. It grows from nine to twelve inches in height, keeping to its dwarfest stature in very dry soil, and produces pleasing, glossy leaves and a long succession of large, golden-yellow flowers from early summer onwards. The late Reginald Farrer stated that it often comes a deeper orange from seeds, but, although I have raised many seedlings, I have never found any variation in the shade of yellow. L. flavum, which ranges in its native habitats from Russia to Germany, has been in cultivation since 1793, when it was introduced from Austria. Farrer records numerous varieties. *S. Arnott.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XXI.—THE ADVANCE CONTINUED.

COOLIES had been promised for May 7, to take us up the valley to a place called Cha Che, just above the last Mishmi village on the other side of the river. We wanted to make this our base. We could see this village, and also Cha Che, from near our camp, or rather, we could see just where they were among the bulges of the valley, being only a few miles away. However, we were told that as the fast rising Delei had swept away the bridge up stream, it would be necessary to fix a rope bridge before we could cross, so that it would take two days to reach Cha Che, the best part of one day being spent crossing the river.

May 6 was another bright day, so I decided to retrace my steps up the mountain to the ridge where the 'Barbatum' Rhododendron and Viburnum Wardii were flowering so finely, taking with me a guide, as well as a camera, in case I missed the track again. I reached the ridge in under three hours, got my photographs, and was back in camp again by 4 o'clock. On the ridge I noticed shoots of the 'Irroratum' Rhododendron, badly frosted and killed; I also collected fresh material of the flowering species to replace those so badly damaged the previous day. In the temperate forest Quercus lamellosa was the only naked tree, having just finished shedding its leaves, and not yet acquired new ones; even Magnolia rostrata was now fully clothed.

On the 7th, only about three dozen coolies of the fifty required turned up, so we sent them off with loads and ourselves waited until the next day. The balance came on the 8th, and off we went.

The climb along the cliff face in the gorge was as bad as it had looked, but luckily no rain fell to make the rocks and ladders slippery. A pretty Abelia with golden-yellow flowers grew in the thickets here, and I also collected a curious Arisaema with a twisted spathe. In the afternoon we reached the river, a wide torrent, roaring over boulders as big as cottages, and found the working party putting the finishing touches to the twisted Bamboo rope (Fig. 191); this was fixed in position the same evening while we camped on the bank. The river banks were lined with trees and shrubs, among which were Birch and Oak, Cornus Nuttallii in flower, and a curious tree of the family Celastraceae—a species of Kurrimia, perhaps. It bore both flowers and ripe fruits, and my attention was drawn to it by the piercing fragrance of the small, yellow flowers; the seeds are glutinous to the touch, and retain this stickiness even after they are dry—or rather, they never do seem to dry properly.

May 9 was fine and very hot. Although the coolies started getting the loads across at 6.30, it was two o'clock before we were all on the other side. The rope was three-stranded, each strand made of eight slivers of Bamboo, the thickness of fine string, carefully plaited; large rings, also made of Bamboo, were threaded on the rope, and the boxes, suspended from these rings, were hauled across by means of a light line made of creepers. So were we! The Mishmis, however, travelled across under their own power with great speed; they looked more like monkeys than ever.

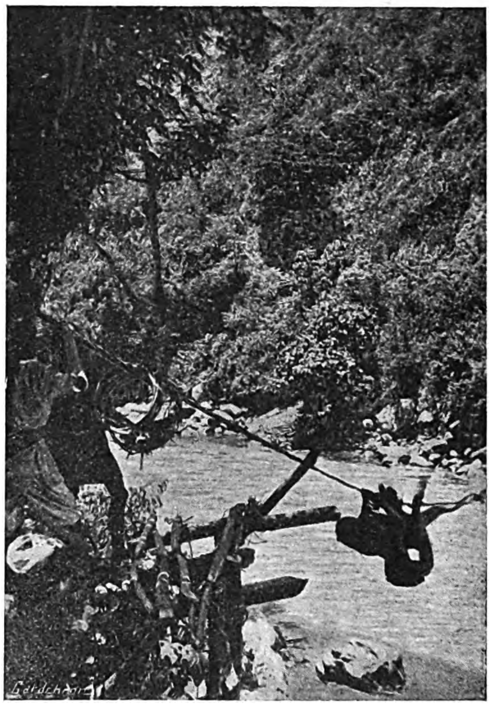

FIG. 191.—CROSSING THE DELEI RIVER BY A BAMBOO ROPE BRIDGE.

A short ascent brought us to the last village in the Delei valley—three huts perched on a very steep face at a height of about 5,000 feet! A deep ravine divided Tajabum, as it was called, from Cha Che, whither we now proceeded. A very insecure natural log bridge, strengthened by a hand-rail and one or two struts, crossed the torrent, which dashed right over the bridge. From here a precipitous ascent brought us to Cha Che, a short and narrow undulating ledge of rock on the face of the cliff in the very eye of the midday sun. Close by, a small stream slid over the cliff; and on this ledge the Mishmis had constructed a *basha* like a doll's house.

It was quite impossible to light a fire in the *basha* without setting it alight, while in the other half, where our boxes were stacked in a close cube, it was impossible to open anything without first dragging it outside, and if it happened to be underneath, impossible to drag it outside without first dragging out a good many other things. Finally, there was no room to dry any paper, either in the sun (when there was any), or over a fire; the lightest breeze would send over the cliff any paper laid on the ground. As for our tents, they were half pitched on the undulating ledge, with sagging canvas and tangled ropes, and being unable to put up our beds we had perforce to sleep on the uneven ground. Such a situation was all very well for a week; as a permanent base camp it was, of course, inadequate. We demanded to be taken back to Tajabum, proposing to make our base there, but the old man of the village refused to have us there, saying there was no ground—nor was there. The Tajabum contingent, in fact, were rather hostile, and, indeed, all the Mishmis were beginning to murmur against us.

We now made enquiries about the path to the pass, and tried to persuade the coolies to go on next day to a better camping ground; but we soon discovered that this was as far as they would take us, now or in the future. They were adamant on that point, and convinced us that they meant what they said. There was a path—one or two young men had been up the valley to its head—but few people went, coolies could not carry loads there, and at this time of year it was impossible, because there were several unbridged streams to cross, which, rising behind them would cut them off from their homes. So there we were, two or more marches from the pass, in an impossible position, our plans collapsing like a house of cards before our eyes. Nothing would move the Mishmis, and, in fact, the interpreter was rather worse than useless, because whenever he was told to tell the Mishmi coolies anything he thought they would not like, he sulked; he translated the longest speech uttered by the *gam* curtly in half-a-dozen words, and it was clear that not only had he no influence over these people but that he sided with them.

Buttercup and I discussed the position until midnight, but the only possible solution that we could see was to return to the village and try to reach the alps in another direction. But first, to get the Mishmis to take us back. Next morning we argued, harangued, threatened, and persuaded for hours. The coolies sat on, waiting for their pay, but I said that unless they took us back they would get no pay. Still they refused. And from that day there began the long drawn out, scarcely veiled warfare between ourselves and the independent Mishmis, which could have but one end.

At last I could stand this stalemate no longer; either the coolies must take up our loads and walk, or, if *we* could not go back to the village, neither should they; I would cut the rope bridge. Taking a native knife, I started for the bridge, which I reached in an hour. It was a blazing hot day, and sitting there in the open, with one eye on the path above. I was slowly roasted. After a long vigil, two coolies came into view; neither of them carried a load, and I promptly cut the rope bridge, then started up the path back to camp. I had not got far when Buttercup appeared, and told me that the coolies had been prevailed upon to take us back—they were coming along; the two coolies I had seen were not ours at all. Here was a pretty kettle of fish! Unconscious of anything wrong, the coolies were coming along, having procured a little food from Tajabum, and now their communications were cut, and we were all marooned on the wrong side of the river! The position was undeniably bad, but I was not very repentant; in an impasse, I must always *do* something, even if, as here, it happens to be the wrong thing.

When the coolies reached the bridge and saw what had happened there was a fine shindy! My interpreter, too, had collapsed from an overdose of Opium and looked as though he was going to die. There was nothing for it but to camp by the river for the night.

Next day the *gam* gathered his clansmen together, told us what he thought of us, and said they were all going down stream to another rope bridge, and when they were all across they would cut it behind them, and we could stew in our own juice. The final act was rather comic, because the Mishmis, in a rage, tore down their shelters, kicked out their fires, and hurled the timber into the river; in fact, they behaved just like naughty children tempestuously breaking their toys because they could not have their own way. Then the whole party streamed away. I kept a stiff upper lip, but did not feel at ease. The equanimity of Buttercup at this crisis was invaluable, and Luso, our Kashmiri cook, took it all calmly.

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; March 2, 16, 30; April 13, and 27; and May 18, 1929.

The next three days were terribly hot and stuffy, and we did literally stew. But the *gam* was no fool; his people had not yet been paid, a bridge was required here, and anyhow to leave us indefinitely might end in reprisals. Within an hour one of his lieutenants returned to act as liaison officer and come to terms. This was soon done, and off went this warrior to make a new bridge, or rather, to repair the old one; more Bamboos had to be cut, and a length of new rope woven into the old, which, of course, was dragging down river on the other side, being still attached to the supports on the far bank.

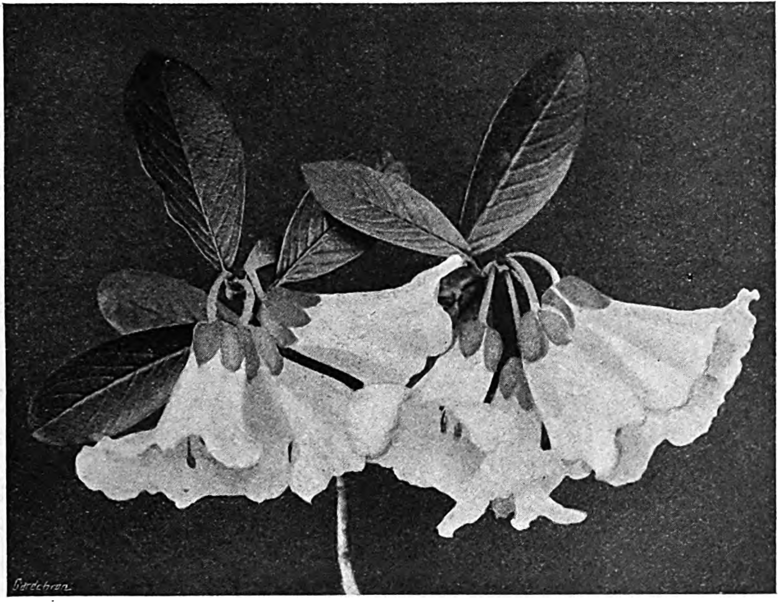

FIG. 192.—RHODODENDRON MEGACALYX.

Sure enough, on the evening of the second day, our man appeared on the far bank with the necessary raw materials. A second man then appeared, and repairs were put in hand; and by the third day, help having been summoned on our side, the rope was fixed in position and some of our boxes slung across. *F. Kingdon Ward.*

TREES AND SHRUBS.

VIBURNUM CARLESII.

Mr. Alfred Unger, Heidelberg, writes:—"I read in *The Gardeners' Chronicle* of May 4, (p. 338)—in connection with the announcement of the death of Mr. William Richard Carles—some remarks about Viburnum Carlesii, which was named after him. The gentleman who sent the note appears not to be sufficiently acquainted with the plant in question, and I am anxious to put this matter right, for the introduction of the first living plants into Europe was due to me. About thirty years ago, I received the first plant of this Viburnum from Korea through a friend. After the first flowers appeared, I sent a few leaves and flowers to Kew, and received a reply to the effect that they had it in their herbarium, and that it was named Viburnum Carlesii. Thereupon I sent the first living plant to Kew, and a few years later sold my stock of about ten plants to Messrs. Lemoine, of Nancy, France, who propagated the species and distributed it throughout Europe. I wrote the first article about this Viburnum, and it appeared in *Möllers Deutsche Gärtner Zeitung* in 1904 or 1905, with a photograph of a vase of flowers."

[The record in the *Botanical Magazine*, t. 8,114, states that "In 1801 Messrs. L. Boehmer and Co., nurserymen, at Yokohama, Japan, sent a cultivated specimen to Kew to be named, with the information that it had been raised from seeds obtained from Corea in 1885. A living plant was received from the same firm in 1902, and this flowered in the Arboretum in May, 1906. *Le Jardin* for August, 1902, p. 229, reproduces a photograph of a cluster of flowering branches received from a Mr. T. Eckhardt, also of Yokohama. . . . The same photograph was reproduced in *The Gardeners' Chronicle*, October 11, 1892." The *Botanical Magazine* dates are wrong. There was no issue of *The Gardeners' Chronicle* of October 11, 1892, and the illustration referred to appeared on p. 261 of our issue for October 11, 1902; the photograph reproduced, and the notes, were contributed by "A. Unger, proprietor of the firm of Mr. L. Boehmer of Yokohama." Mr. Bean in *Trees and Shrubs Hardy in the British Isles*, states: "Native of Corea; introduced from that country to Japan, in 1885, by Mr. Unger of the firm of L. Boehmer and Co., Yokohama. A single plant was sent to Kew by the same firm in 1902, which represented its first introduction to Europe."—Eds.]

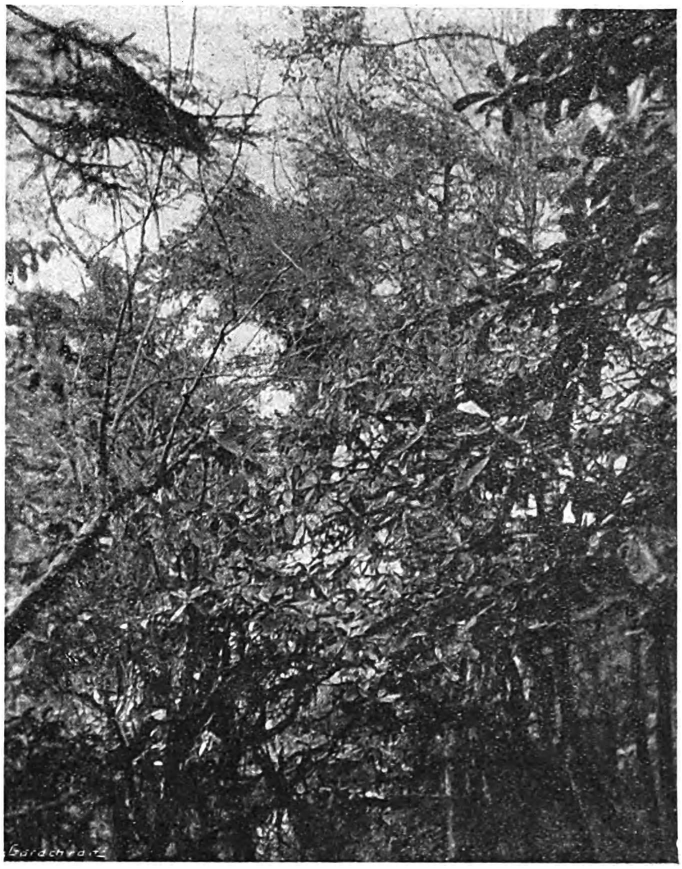

FIG. 193.—A TANGLE OF RHODODENDRON FOREST, 8,000 FT. ALT.

LINDERA BENZOIN.

Known here under the name of Benzoin aestivale, Mr. W. J. Bean deals with this hardy American shrub under the title of Lindera Benzoin, and remarks that "it makes a neat bush of no particular merit or distinction." It is very plentiful in this locality, occurring especially in moist situations, and during the month of April it is rendered attractive by the numerous small, greenish-yellow flowers which are borne on the previous year's wood, producing much the same effect as do the flowers of Cornus Mas, and showing to particularly good effect against a background of dark evergreens. In the fall, the leaves turn to a clear, bright yellow hue, and the branches are studded with the small, oval, scarlet fruits, producing a most pleasing effect.

The name of Spice Bush is commonly applied to this shrub because of the pungent, spicy odour which is apparent when the wood and leaves are bruised; it is also known as the Benjamin Bush.

Lindera Benzoin will attain a height of from six to fifteen feet, and bears oblong-obovate leaves from three to five inches in length, with ciliate margins. They are bright green above and paler beneath. The bark of the Spice Bush is aromatic, stimulant, tonic and astringent, while the fruits are also used medicinally.

Propagation is effected by means of layers, greenwood cuttings or new seeds; it should be noted that the seeds soon lose their vitality. *T. H. Everett, Pleasantville, New York, U.S.A.*

ROYAL HORTICULTURAL SOCIETY.

EXHIBITION AT CHELSEA.

May 22, 23 and 24.

PRECEDED by gloriously fine weather and favoured by similarly happy climatic conditions on the opening day, the Chelsea Show of 1929 will be remembered for many years to come as a brilliant success in spite of the long, severe and dreary winter that lingered even into "the merrie month of May." The great extent, great beauty and great interest of the exhibition held in the grounds of the Royal Hospital, Chelsea, surpassed expectations, and provided ample evidence of the unrivalled skill and undaunted perseverance of British cultivators. The odds were all against a great show, but the verdict of many who have had wide experience of Temple shows and Chelsea shows, was that this spring exhibition of the Royal Horticultural Society "was better than ever."

There was no official opening or royal visitation on the opening day, but Princess Mary, accompanied by Viscount Lascelles, paid a lengthy visit to the exhibition during the afternoon of May 21, while judging was in progress. Fifty gentlemen, from all parts of the country, accepted invitations to act as judges, and these accomplished their difficult tasks between the hours of 3 p.m. and 6 p.m., and were afterwards entertained to dinner in the Ranelagh Café by the President, Mr. Gerald Loder, and the Council.

Rock gardens were once again a great attraction, while the formal—and informal—gardens were arranged in larger number and greater variety and interest than usual. The exhibits of trees and shrubs out-of-doors added to the spring-time beauty of the permanent trees and shrubs; it was Lilac time, and almost Hawthorn time, at Chelsea.

Under canvas, the exhibits as a whole displayed a glorious riot of colour such as has never been excelled at a Chelsea Show. Messrs. **Sutton and Sons** had a wonderful exhibit of greenhouse plants and annual flowers; indeed, they surpassed themselves; alas! the exhibit did not lend itself to the eye of the camera—it needed a very wide space around it, to enable its charms to be appreciated to the full. An exhibit of unusual interest was the one arranged by **Lady Aberconway** and the Hon. **H. D. McLaren**, Bodnant; this contained nearly one hundred particularly rare and choice plants. Carnations, Sweet Peas, Azaleas, Rhododendrons, tropical foliage plants, Calceolarias, Begonias, Delphiniums, Paeonies, Irises, alpine plants in wondrous beauty and variety, Hydrangeas (we heard them called "high Geraniums"), and Lilies were a few of the subjects that secured general admiration. Orchids and Roses had each a tent to themselves; the former were, as usual, a great attraction, and made a beautiful display of grace and colour, while the Roses scented the air with their fragrance. Astounding vegetables, tempting Strawberries and Apples in wonderfully fine condition, all added to the interest of the show. The educational features and the horticultural sundries section we shall deal with in due course.

One exhibit deserves special mention. It was grimly romantic and altogether extraordinary. This was the display of Californian plants brought over and arranged by Mrs. A. **Sherman Hoyt**, of Pasadena, whose portrait we have much pleasure in publishing (on p. 372). The Cacti, the Redwood scene, and the Death Valley (Fig. 195), combined to make an exhibit generally described as "wonderful" and "extraordinary." Mrs. **Sherman Hoyt** brought over this exhibit and arranged it at her own expense; she has presented it to the Royal Botanic Gardens, Kew, and, in addition, she has donated a thousand dollars to the Royal Horticultural Society. Mrs. **Hoyt** is a generous, enthusiastic and enterprising lady, and deserves all the congratulations she received.

Finally, a few words of appreciation are due to the fine work of the members of the Council of the R.H.S., to Mr. F. R. Durham, and Mr. A. Simmonds, the Secretary and Assistant Secretary, respectively, and the whole of the staff, who laboured long and so successfully.

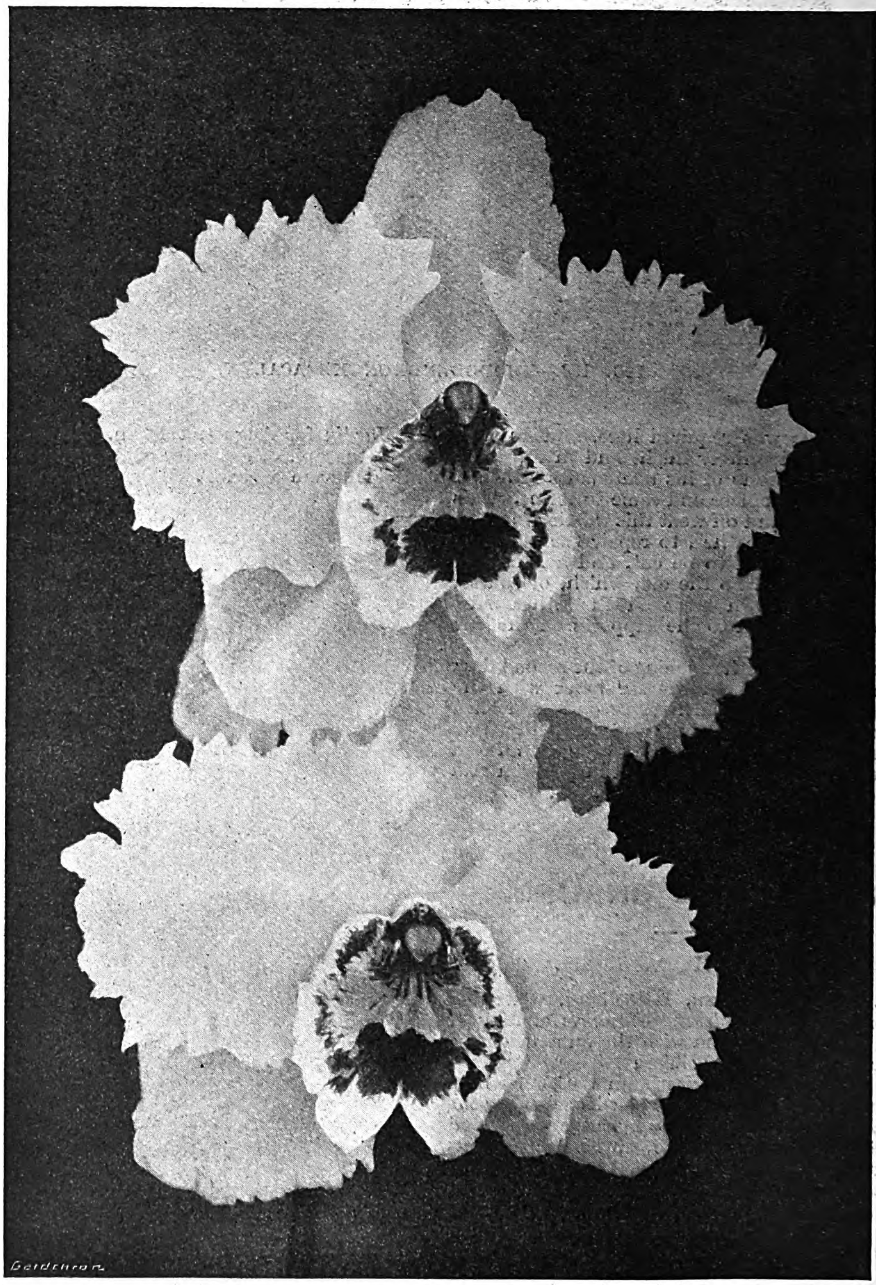

FIG. 194.—CHELSEA SHOW: ODONTOGLOSSUM CRISPUM VAR. PROTISTUM

Flowers pure white. A superb variety exhibited by Messrs. Charlesworth & Co.

The exhibitors, too, and their staffs, merit thanks for accomplishing what, a few weeks ago, appeared to be the impossible.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Sec.), Mr. Lionel de Rothschild, Mr. J. C. Cowan, Mr. E. R. Ashton, Mr. T. Armstrong, Mr. H. G. Alexander, Mr. Robert Paterson, Mr. Richard G. Thwaites, Mr. Frederick J. Hanbury, Mr. Fred K. Sander, Colonel Stephenson Clarke, Mr. S. W. Flory, Prince Shimadzu, Mr. A. A. McBean, Mr. Charles H. Curtis, Mr. J. E. Shill and Mr. Stuart H. Low.

First Class Certificates.

Odontioda Prince Olaf (*parentage unknown*).—A very beautiful hybrid with shapely flowers of considerable substance. The sepals and petals are deep red, with rose tinting at the edges and tips, while the flat lip is rose-coloured, red at the base, and with a handsome golden disk. Shown by Messrs. Sanders.

Miltonia T. B. Armstrong (*M. vexillaria var. Leopoldii* × *M. William Pitt*).—An attractive hybrid, with deep rose, red-tinted sepals and petals, a blackish mask, and with a wide white zone between it and the wide rosy frontal portion. Shown by Messrs. Armstrong and Brown.

Odontioda Laura, Exbury var. (*Oda. Brewii* × *Oda. Coronation*).—This handsome hybrid betrays its O. Brewii parentage in the deep colouring and substance of its shapely flowers. The colour is deep crimson-scarlet, with a golden disk. Shown by Lionel de Rothschild, Esq. (gr. Mr. B. Hills, Exbury, Southampton).

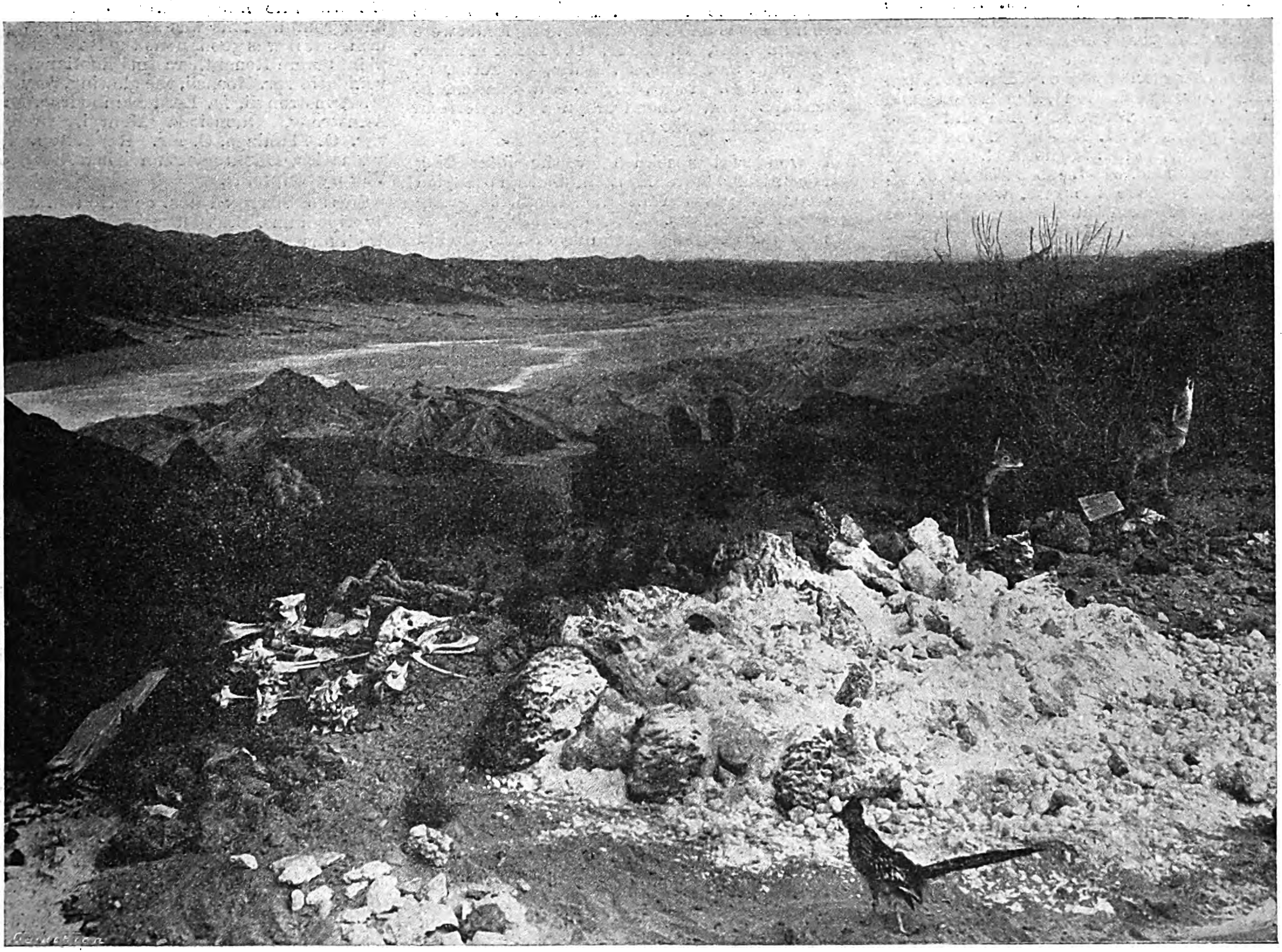

FIG. 195.—CHELSEA SHOW: DEATH VALLEY, CALIFORNIA, EXHIBITED BY MRS. A. SHERMAN HOYT.

Phalaenopsis Gilles Gratiot (*P. Aphrodite* × *P. Rimestadiana*).—A splendid pure white Phalaenopsis of fine proportions and substance; the lower halves of the wings of the lip are yellow, and there are a few purple dots below the yellow disk. It may well be described as a glorified P. Rimestadiana. Shown by Messrs. Sanders.

Cattleya Prince Shimadzu var. King George (*C. Tityus* × *C. Hardyana*).—A fine form of a fine hybrid. The wide petals are of a lovely mauve shade, with frilled edges, and the sepals are of similar colour. The big, frilled lip is intense crimson-purple over the frontal portion, and gold at the base and throat. Shown by Messrs. Black and Flory.

Awards of Merit.

Lissochilus speciosus.—An old Orchid in cultivation, but one seldom seen. It is a terrestrial species from Natal, and produces tall—three feet to seven feet—spikes of yellow and greenish-yellow flowers, each about two inches wide. Two plants were shown, one—the better—by W. R. Lysaght, Esq. (gr. Mr. T. Briscoe), Castleford, Chepstow; and the other by W. van de Weyer, Esq. (gr. Mr. A. George), Clyffe, Dorchester.

Dendrobium Prince Arthur var. Colossus (*D. Regium* × *D. Euryalus rubens, Gatton Park var.*).—A large-flowered form with soft, bluish-mauve sepals and petals and a white base and throat to the lip. Shown by Sir Jeremiah Colman, Bt. (gr. Mr. B. F. Perfect), Gatton Park, Surrey.

Odontioda Zarina var. Brilliant (*Oda. Chanticler* × *Odm. crispo-Harryanum*).—In this hybrid the flowers are unusually rounded and broad. The colour is a bright shade of salmon, with pink edges to the sepals and petals and a salmon-pink tip to the golden-disked lip. Shown by Messrs. Cowan and Co.

Cypripedium bellatulum var. King George. This finely-formed flower has very large purplish spots and it is a very attractive form. Shown by Dr. F. T. Paul, Caldy, Cheshire.

Brasso-Laelio-Cattleya Gordon Highlander var. Majestic (*L.-C. Aphrodite* × *B.-C. Maronae*).—A very large and magnificent flower of this variety was shown. The sepals and petals are pale pink, the sepals being faintly mauve-tinted. The splendid lip is finely frilled, mauve, shaded with purple, and with a wide, soft, golden throat and brown lines at the base. Shown by Messrs. Stuart Low and Co.

Laelio-Cattleya Berenice (*L.-C. Lustre* × *L.-C. Madame Brasseur Hye*).—A large and finely proportioned Laelio-Cattleya with broad, mauve petals and narrower mauve sepals. The wide, rounded, frilled lip is rich royal purple, with gold veins in the throat. Shown by Messrs H. G. Alexander, Ltd.

Brasso-Cattleya Orange Glory (*L.-C. Elinor* × *B.-C. heatonense*).—A glowing and arrestingly beautiful hybrid of clear, light and bright orange-yellow colouring, the tint being slightly deeper on the petals and in the throat of the finely-frilled lip than elsewhere. Shown by Messrs. H. G. Alexander, Ltd.

Odontioda Leeana var. Vivid (*Cochlioda Noetzliana* × *Odm. crispo-Harryanum*).—A gloriously-coloured form and well-named, as its finely-proportioned flowers are of a bright rich grenadier-scarlet hue, with a golden disk and a gold edge to the front of the lip. Shown by Messrs. J. and A. McBean.

Cattleya Susan var. alba (*C. Suzanne Hye de Crom* × *C. Cowaniae var. alba*).—A lovely Orchid with wide, white sepals and petals, and a white, frilled lip that is heavily shaded with soft lemon-yellow. Shown by Messrs. J. and A. McBean.

Brasso-Cattleya The Globe var. Mrs. Simon Gay (*B.-C. Cliftonii* × *C. Trianae*).—The sepals and petals of this large-flowered variety are palest mauve-pink, while the big lip has a fringe and base of similar dainty colour, with a wide, light purple area, and a pale yellow throat. Shown by Frank Mercer Esq. (gr. Mr. F. Bank) Clovelly, Steyning, Sussex.

Preliminary Commendation.

Miltonia Armstrongii (*M. Miss Louisa Fowler* × *M. William Pitt*).—In this hybrid the flower is deep crimson-tinted cerise, with a brown, white-edged mask. Shown by Messrs. Armstrong and Brown.

Cultural Commendation.

To E. R. Ashton, Esq. (gr. Mr. Kent), Broadlands, Tunbridge Wells, for Dendrobium atroviolaceum, with ten spikes; to J. B. Joel, Esq. (gr. Mr. C. J. May), Childwickbury, St. Albans, for Cypripedium. Rothschildianum, Northaw House var., with eight spikes of flowers.

Groups.

Sir Jeremah Colman, Bt. (gr. Mr. J. M. Richards), Gatton Park, Reigate, exhibited a very fine group of well-grown plants. Conspicuous in the background and centre were tall examples of Dendrobium Gatton Sunray, very fine, and D. Dalhousieanum luteum, while in the foreground were examples of D. Prince Arthur. Particularly fine were the Lycastes, for which the Gatton Park collection is famous; these included L. Skinneri varieties Mrs. Hamilton Smith, Rainbow, delicatissima, Fulshawense and Hellemense. Miltonas were also fine and there were large plants of M. Lyoth, M. vexillaria, M. Princess Mary, and M. Memoria G. D. Owen. Splendid specimens of Lælio-Cattleya J. F. Birkbeck stood above the rest, while in the foreground were such interesting plants as Cœlogyne pandurata, Polystachya paniculata, the wonderful Bulbophyllum Bennendyckii, B. macrobulbon, Dendrobium Victoria Reginae, Cattleya citrina, Vanda cristata and Cypripedium Godefroyæ leucochilum, Gatton Park var. Altogether a grand exhibit.

J. J. Joicey, Esq. (gr. Mr. J. Mackay), The Hill, Witley, set up a very pretty exhibit of bright and interesting Orchids. Anguloa Clowesii was the central feature and Cymbidium Lowianum formed the background, with Cattleya Mossiæ and the fine old Laelia purpurata Miltonias were well represented by M. vexillaria, M. v. var. Lyoth, M. Princess Margaret and M. Papillon, while bright colour was provided by Odontioda Bradshawiana, O. Chanticler, O. Charlesworthii and O. Grenadier. Interesting and uncommon orchids included Gongora, sp., Aerides Fieldingii Maxillaria sanguinea, Bulbophyllum Lobbii and the very old Selenipedium Dominianum.

Only ten plants were exhibited by E. R. Ashton, Esq. (gr. Mr. C. V. Kent), Broadlands, Camden Park, Tunbridge Wells, but every one was a specimen and particularly fine for so late in the season, they were D. atroviolaceum (2) one carrying ten spikes, D. Thwaitesæ, D. nobile var. Cooksonii, D. Owenianum, D. nobile var. virginata, D. Sir F. E. Moore (2) and D. Ainsworthii, Hazelbourne var.; a finely grown set.

Messrs. H. G. Alexander, Ltd., contributed a corner group in which one of the features was a colony of the brilliant orange coloured Laelio-Cattleya Orange Gem, with one plant of L-C. Syrinx var. Dulce. Larger-flowered Laelio-Cattleyas were represented by fine examples of L.-C. Gretal var. magnifica with nine flowers; the splendid L.-C. Berenice; L.-C. Clarion var. magnifica, L.-C. Cassandra, L.-C. Gladiator and L.-C. Meuse, Westonbirt var. Cattleya Mossiae was well shown, together with C. M. var. Wagneri, C. M. var. Reineckiana, C. Iris and C. Muriel var. alba and C. Skinneri. A few Cymbidiums filled the angle of the group, swinging their spikes over Cypripedium Holdeni, Westonbirt var. A good example of Vanda suavis occupied a prominent position and two other fine Orchids were Brasso-Cattleya Orange Glory and the rich orange-red Sophro-Laelio-Cattleya Falcon, Westonbirt var.

The bold display made by Messrs. Sanders contained two "hanging groups" of the lovely Phalaenopsis Rimestadiana, carrying an aggregate of about thirty spikes of pure white flowers. Cymbidiums were a prominent feature and these were represented by large specimens of C. Ceres, C. Erica Sander in variety and C. Mary Sander, all carrying an abundance of sturdy spikes. Oncidium Marshallianum was associated with the Cymbidiums in effective fashion. Miltonias were shown well and included M. Venus and M. vexillaria in great variety. Brasso-Cattleya Shillianum and fine forms of Cattleya Mossiae made a brave show.

A few special Orchids were Brasso-Cattleya Salta, Phalaenopsis Grand Condé, P. Gilles Gratiot—two hybrids, Dendrobium acuminatum, Odontioda Prince Olaf, Miltonia Fletcheriana, Cymbidium Devonianum, C. Huttonii and the lovely Burrageara Windsor. A fine display but a trifle crowded.

The striking arrangement made by Messrs. Mansell and Hatcher attracted attention and admiration. In the centre, and raised, was a delightful grouping of Miltonias in great variety, including hybrids and varieties of M. vexillaria. Below this feature was a colony of Cypripedium bellatulum with a few examples of C. Maudiae and C. Curtisii var. Sanderae. Very fine were the spikes of Odontioda Flamingo O. rosefieldensis, O. keighleyensis, O. Edith Hodgson, O. Bradshawiana, O. Vuylstekae and O. Charlesworthii. These were grouped with Odontoglossums on either side of the Miltonias. The Odontoglossums were numerous and a few outstanding kinds were O. triumphans, O. Lena, O. Black Prince, O. crispum xanthotes, O. Italia, O. Cetus, O. Mirum and O. Horus. Lycaste aromatica, L. breviscapa and Chondrorhynca Chestertonii were noted along the front line.

A wonderful specimen of the interesting and beautiful Dendrobium acuminatum occupied the central position in the delightful group arranged by Messrs. J. and A. McBean. It was by far the finest example of this Orchid we have ever seen. It had eighteen long, drooping spikes carrying a total of three-hundred-and-sixty rose-red flowers and buds. If the Cooksbridge firm had shown nothing else this would have been an outstanding example of their cultural skill. The group was finely arranged, and contained a fine collection of Cymbidiums, Miltonias, Odontoglossums, Odontiodas, Miltonias and Lycastes, the whole making a charming effect. A few outstanding plants were Cattleya Susan var. alba, Miltonia Kennie var. Princess Elizabeth, Brasso-Cattleya The Globe var. Mrs. S. Gay, Brasso-Laelio-Cattleya Queen of the Belgians, Oncidium McBeanianum, Coelogyne pandurata, Dendrobium Victoria Reginae, Odontioda Grenadier, Miltonia Bleuana var. virginalis, O. Leeana var. Vivid, O. Madeline and Epiphronitis Veitchii.

Dr. F. T. Paul, Caldy, Cheshire, submitted Cypripedium bellatulum in variety, as well as C. concolor, C. Psyche and C. Chapmanii; there were sixteen plants, all in fine condition.

The largest display in the Orchid tent was made by Messrs. Charlesworth and Co., who had a group across the end of the tent, and extended into two short right-wings at right-angles. Odontoglossums were the outstanding feature of this fine exhibit, and in the centre of the group several dozen spikes of lovely forms of O. crispum were surrounded by hybrids of brilliant colour, and made a lovely display. The finest of the crispum forms was O. c. var. protistum (Fig. 194), of lovely form and fine size. The coloured, hybrid Odontoglossums, included O. Asmode, O. Norman, O. Toreador, O. Imperator, O. Nubia, O. Romulus, O. Matador, O. Eudora var. Aesculus—very fine, and O. Jamesianus var. Radium. Vanda suavis was finely represented, as were Coelogyne pandurata, Vuylstekeara Aspasia, and Miltonia William Pitt; Odontiodas and Cattleyas were also shown, but did not figure largely in this splendid exhibit.

Messrs. Black and Flory arranged their plants quite clear of the background of Palms and Ferns, producing a kind of stereoscopic effect. A fine feature of the display was the brilliance of the Cattleyas, and among these the finest were C. Prince Shimadzu var. King George, with a glorious gold and purple lip; C. H. B. Turner, C. Hardyana in variety, C. Mossiae in variety, C. Irene, C. Sohma, C. Chelsea var. scintillans, C. Canada var. Chelsea, C. Flammea and C. Dr. Lacroze var. Rosalind. Miltonia Kennie var. Rosalind, M. Doris, M. Bleuana, M. Gertrude West and M. Lena were used with advantage, and Cypripediums and Odontoglossums finished the front of the exhibit.

A bright and lightly-arranged display from Messrs. Stuart Low and Co. was much admired. This firm used Cymbidiums, Oncidiums, Bamboos and Palms in the background, while similar Orchids of lowlier stature rose from the Cattleyas and Odontoglossums. Brasso-Cattleyas were notably prominent, and represented by B.-C. André Maron, B.-C. Mirabilis, B.-C. Jupiter, B.-C. Apollo, B.-C. Baroness, B.-C. Empereur de Russie var. Purity, and B.-C. Leemanae. Good Cattleyas were C. Tityus and C. Skinneri, while Laelio-Cattleya Hyeana, L.-C. G. S. Ball—very fine—and L.-C. Canhamiana were not less beautiful. Rarer and interesting subjects were Cyrtopodium Andersonianum, nearly six feet high and with a head of yellow flowers; Epidendrum Parkinsonianum, Bifrenaria Harrisoniae, Zygo-colax Charlesworthii, Coelogyne pandurata and Cypripedium niveum.

Beautifully and lightly arranged were the Orchids exhibited by Messrs. Armstrong and Brown who hung Miltonias on their velvet background. This was a small display for this firm, but it was good, none the less. Prominent plants were Renanthera Imschootiana, Miltonia vexillaria var. Moensii, the glowing, rosy-crimson M. Armstrongii, M. Lord Lambourne, M. T. B. Armstrong, Odontioda Henryi, Orchidhurst var. O. Flamingo, O. Mr. R. Felton, Lycaste aromatica, Odontoglossum King Albert and O. Victory Supreme.

Messrs. Sutton Bros. contributed a group of Cypripediums, Brasso-Cattleyas, Miltonias, Dendrobiums and Cypripediums; the last were arranged along the foreground, and included C. Rossettii, C. Maudiae and C. barbatum; Ada aurantiaca and Dendrobium chrysotoxum also figured in this group.

Messrs. Cowan and Co. made a bold display wherein Brasso-Cattleya Shilliania, Brasso-Laelio-Cattleya Jupiter, L.-C. Aphrodite, L.-C. Hassallii var. alba, Cattleya Waltersiana and C. Mossiae were outstanding features. A very large-flowered form of Oncidium varicosum was associated with Cymbidiums, while Odontoglossums, Odontiodas and Miltonias figured at the ends of the display, and Cypripedium bellatulum, C. Curtisii var. exquisitum and C. beechense var. magnificum figured in the foreground.

Mr. Harry Dixon grouped Cattleyas and Laelio-Cattleyas in the centre of his display, and raised Lycaste aromatica, L. Skinnerii var. Ruby Gem, Cymbidium tigrinum, Cymbidium Devonianum and Dendrobium atroviolaceum above small plants of Odontoglossums, Odontiodas, Miltonias and Cypripediums.

Floral Committee.

Section A.—Mr. Henry B. May (in the chair), Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. R. Findlay, Mr. J. T. West, Mr. Donald Allan, Mr. W. B. Gingell, Mr. J. M. Bridgeford, Mr. M. C. Allwood, Mr. D. Ingamells, Mr. R. B. Long, Mr. F. C. Langdon, Mr. J. B. Riding, Mr. William Howe, Mrs. Helen Lindsay Smith, Mr. J. F. McLeod, Mr. D. B. Crane, Mr. H. R. Darlington, Mr. Charles E. Pearson and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. W. J. Bean (in the chair), Mr. W. G. Baker, Mr. G. Reuthe, Mr. George Harrow, Mr. James Comber, Mr. T. W. Taylor, Mr. Eric M. Marsden-Jones, Mr. J. J. Crosfield, Mr. John Millais, Mr. A. Bedford, Mr. L. R. Russell, Mr. R. W. Wallace, Mr. Clarence Elliott, Lady Beatrix Stanley, Mr. G. Yeld, Mr. R. C. Notcutt, Sir William Lawrence, Bt., Mr. W. Irving, Mr. F. G. Preston, Mr. Amos Perry and Mr. N. K. Gould, Secretary.

First Class Certificates.

Magnolia Brozzonii.—A Soulangeana hybrid which has large, white flowers, lightly tinted and veined with rosy purple towards the base of each segment. Shown by Lionel de Rothschild (gr. Mr. A. Bedford), Exbury, Hampshire.

Rhododendron Vanessa.—The reason for the high award to this Rhododendron is not readily apparent. The bush is of spreading, shapely habit and flowers when comparatively young. We understand that it is a R. Souliei hybrid. The trusses are loose and carry medium-sized pink-shaded flowers which have carmine spots at the base. Shown by Lady Aberconway (gr. Mr. F. 3. Puddle), Bodnant, North Wales.

Awards of Merit.

Daphne tangutica.—A desirable Chinese, sub-evergreen, little shrub. It is of sturdy, erect habit and flowers freely. The alternate, lanceolate leaves are dark green. The flowers are white with bright rosy-purple exteriors and buds. Shown by Messrs. Bees, Ltd.

Paeonia Mlokosewitschii.—An uncommon herbaceous species. The foliage is luxuriant. The flowers are of a medium yellow tone and the calyx segments curved inwards. Shown by R. D. Trotter, Esq., Ockley.

Rhododendron Muriel Messel.—A very beautiful variety raised by crossing Loder's White with Loderi. The bright pink buds expand widely and are of lovely pink shades with carmine spots. The trusses are very large and shapely. Shown by Lt.-Col. L. C. R. Messel, O.B.E. (gr. Mr. J. Comber), Nymans, Handcross, Haywards Heath.

Ourisia alpina.—The ovate, serrate leaves make a dark green rosette from which spring the reddish-stemmed inflorescences. The lilac-pink flowers, which are borne in opposite pairs, have relatively long, purple stalks set in leafy bracts. Shown by Captain McEacharn, Galloway House, Wigtwonshire (see Fig. 199).

Primula hybrida var. Sir George Thursby.—A seedling from a cross between P. japonica and P. Lissadell hybrid. It is a vigorous, free-flowering plant, bearing whorls of large, deep rose-pink flowers which have irregular velvety-crimson zones. Shown by Mr. G. H. Dalrymple.

Dodecatheon splendidum var. Brilliant.—An improved variety of distinct garden value. It bears good spikes of bright rosy-purple flowers. Shown by Mr. Amos Perry.

Rhododendron Fortune's Triumph.—A compact, truss of large, pale pink flowers which have bright carmine spottings at the base. Apparently this is rather less tender than others of its type. Shown by G. H. Johnstone, Esq. (gr. Mr. S. Skelton), Treversands, Grampound Road, Cornwall.

Aponogeton leptostachyum var. lilacina.—A pretty little Pond-weed. The leaves are about two inches in length, and the small, forked inflorescences have tiny, rosy-lilac flowers. Shown by Mr. Amos Perry.

Rose Barbara Richards.—A very beautiful, fully double H. T. variety of good form. The large, fragrant flowers have broad, recurving petals of creamy-white colour with a biscuit-yellow flushing in the centre. Shown by Messrs. Alex. Dickson and Sons.

Statice profusa var. superba.—This is a greatly improved variety. It is exceedingly floriferous and the purple bracts are relatively large. Shown by Mr. W. Chandler, Rolvenden.

Begonia Mrs. J. Raeburn Mann.—A splendid, double-flowered, tuberous-rooted variety of glowing pink colour. Shown by Messrs. Blackmore and Langdon.

Rock Gardens.

It was fully evident that rock gardens retain their great popularity with both the exhibitors and the public, for the customary space at the Embankment end of the grounds was fully occupied with the gardens which attracted a large throng of admirers throughout the show.

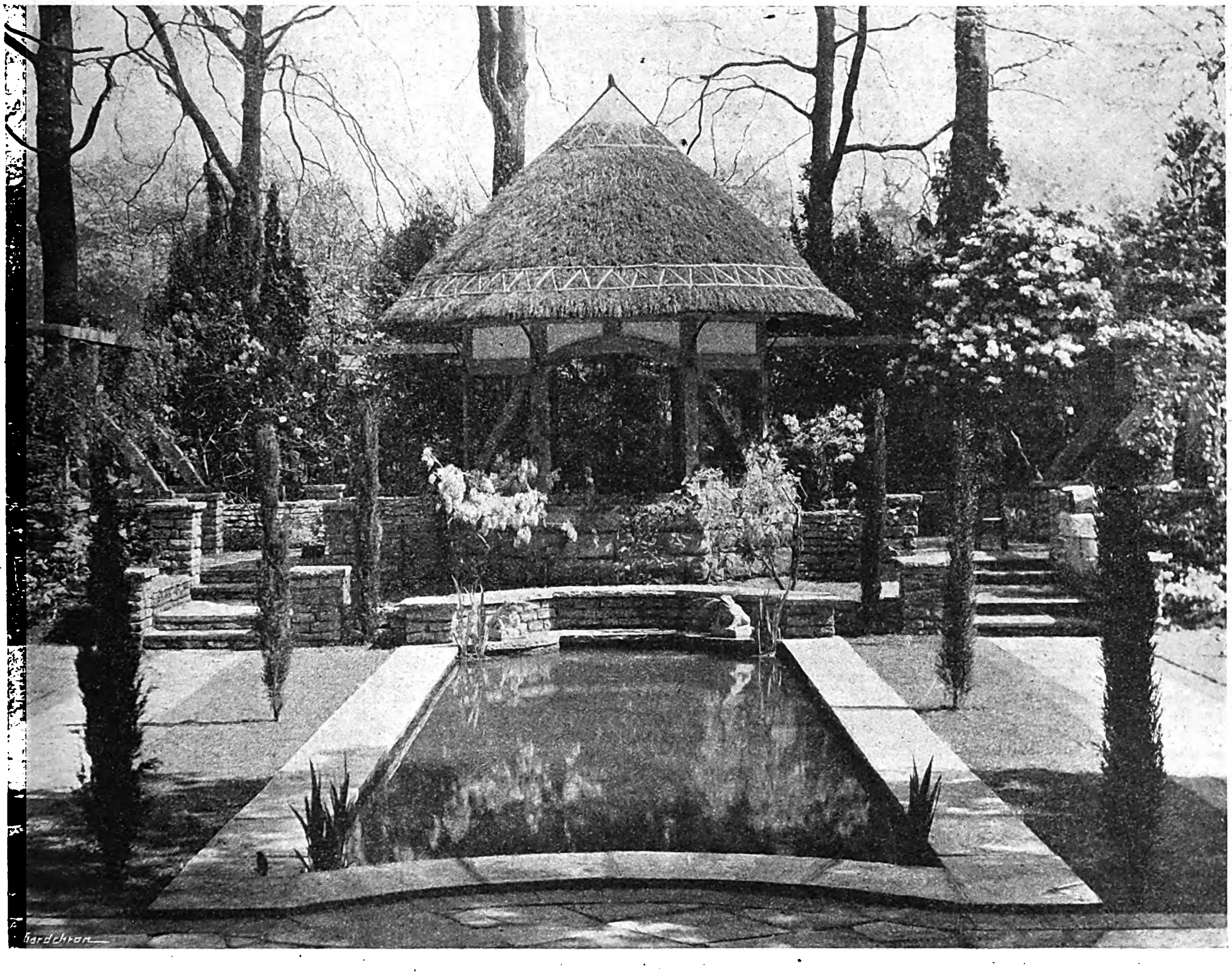

FIG. 196.—CHELSEA SHOW: MESSRS. R. W. WALLACE AND CO.'S FORMAL GARDEN.

No doubt, obedient to the expressed wishes of the Council of the Society, this year's rock gardens displayed a much greater diversity of material and treatment than those of recent years. The result would seem to have attained the object in view, but we feel that it must be conceded that this important feature of the Chelsea Show lost in general effectiveness. Viewed as individual efforts there was a certain gain, but the effect as a whole was not equal to that of recent years.

The rock garden of the Orpington Nurseries Co. was somewhat of the form of a shallow, grassy bay, backed by boulders of weathered stone, clad with mosses and lichens which gave an old-established appearance, while towards the front there was a pool. The principal plants used were dwarf Pines, Brooms and Azaleas, with Lithospermum Heavenly Blue, dwarf Irises and Saxifrages.

A sandstone rock garden with a background of Pines and deciduous shrubs was made by Messrs. W. E. Th. Ingwersen, Ltd. The chief alpines were Phlox compacta, Gentians, Androsaces, Geums and Aubrietias.

A spacious effect was obtained by Messrs. Hodgsons, Ltd., who had ample greensward in front, with weathered boulders and a waterfall at the back. Bright colour was provided by double-flowered Gorse, various Japanese Maples, Alyssum saxatile varieties, dwarf Phloxes and double Trollius.

A sandstone rock garden with a grassy mound in the middle was shown by The Hardy Plant Nursery. At the foot of the mound they had generous breadths of Iris stylosa and also used Japanese Azaleas, Thrifts, Sedums and Saxifrages.

A neat little rock garden was made by Mr. Ernest Dixon at the Avenue end. He planted various Saxifrages, Alyssum saxatile varieties, dwarf Phloxes, Alpine Auriculas and, towards the back, some Japanese Azaleas, Brooms and other shrubs.

A pleasant rock garden was made by Messrs. Tuckers, Ltd., with weathered boulders of moderate size. The disposition of the stones was distinctly good and, in the bright sunshine, the dry stream-bed was quite appropriate, and of natural appearance. In the background they grouped various low Pines, with Brooms and Azaleas. The general planting, though, perhaps, on a lavish scale, was bright and attractive. Prominent among the many plants were Saxifraga pyramidalis and various other Saxifrages, Meconopsis Baileyi, Alyssum saxatile varieties, many dwarf Irises, Geums, Gentians, Cheddar Pinks, Phlox Vivid and blue Aquilegias.

An uncommon design was adopted by Mr. Clarence Elliott in the bold outcropping of his rock garden, and the isolated boulder, surmounted by a mature specimen of Pinus montana over various Stonecrops found many admirers. The background was also treated very successfully, and here were prostrate Junipers, Brooms and Azaleas behind boulders which sheltered ample sweeps of Phlox Vivid, P. Douglasii var. Lilac Queen, P. G. F. Wilson, Viola gracilis var. Grandeur, Iris cristata, Oxalis enneaphylla rosea and various Saxifrages. A nook in the middle of the garden contained several rarer plants, particularly the dwarf Calceolaria Darwinii bearing its relatively large pouches of crimson, gold and white, which attracted the alpine enthusiasts. The general planting was wisely restrained, although sufficient

Perhaps the most imposing rock garden was that of Mr. G. G. Whitelegg, even although it did not contain the very largest boulders in the show. His exhibit was made up of large Cumberland stone piled up towards the back, and tumbling streams, with a pool at the front. Various Conifers were placed effectively in the background and elsewhere, and often these were associated with Brooms, Azaleas and other shrubs. In most instances the boulders were capped with either prostrate Junipers or masses of alpines, such as the dwarf Phloxes, Stonecrops and Saxifrages. In the foreground there were goodly patches of golden Trollius, Phlox Vivid and other sorts, Alyssum saxatile varieties and Daphne Cneorum.

Although it did not seem to have found great favour with the judges, the rock garden of Messrs. Pulham and Son had many admirers among the visitors. Towards the back there were pleasant boulders of Cumberland stone yielding a waterfall of natural appearance which tumbled down to a still pool. The plantings, which were done with knowledge and skill, included Daphne Cneorum, Phlox Vivid, golden Trollius, Saxifrages in variety, Lithospermum Heavenly Blue, several Dodecatheons, Sisyrinchiums, and a brilliant patch of Spanish Broom.

The largest stones in the show were the immense boulders used by Mr. Gavin Jones, who also had a waterfall which fed two pools. In one corner of his exhibit he had an effective planting of dwarf Irises, Gentians, Androsaces, Primulas and Saxifrages, while by the pools he placed Funkias, Primulas and other appropriate plants.

Stove and Greenhouse Plants.

Appropriately enough, the superb exhibit of Messrs. Sutton and Sons (Fig. 197) was placed in the middle of the large tent, where, on a considerable space, they displayed very many splendid plants, all of them grown from seeds. The general scheme of a series of bold mounds of flowers, and winding paths, provided many most delightful vistas. The tent rafters provided a fitting place for the display of an enormous number of plants of the drooping Begonia Lloydii, a plant which was also used to great effect, with a groundwork of moss, in masking the tent pillars. Well within the group there was a large mound of the magnificent Salpiglossis which Messrs. Sutton and Sons grow so well. The other principal mounds were of blue Cinerarias, both of the stellata and large-flowered types, large-flowered Calceolarias of great excellence, and Gloxinias. For many years the Reading firm has shown Streptocarpus of considerable excellence, but never before so finely as on the present occasion, while the tuberous-rooted Begonias were of much more than the usual quality. A surprise item was the pool where Gloriosa Rothschildiana rambled over the sides and hung its gorgeous flowers to be mirrored in the still waters, and the richly golden Richardia Pentlandii gave the appropriate bright colouring.

An extensive collection of tropical plants, set out by Messrs. L. R. Russell, Ltd., was one of the features of the show. Exceedingly well-grown Codiaeums (Crotons) were freely used, and these were mostly as tall, single-stemmed specimens furnished with beautifully coloured leaves from top to bottom. The principal sorts were Prince of Wales, Eugene Draps, Warrenii and Golden King. The many foliage plants also included vigorous, highly-coloured Dracaenas, and Alocasias in considerable variety, while in the foreground there were some exquisite Marantas. The principal flowering plants were Epiphyllum Gartneri, of which there were two splendid batches, Gloriosa superba and Gloriosa Rothschildiana, various Bromeliads, and Clivias.

A very meritorious collection of miscellaneous stove and greenhouse plants was shown by Messrs. John Peed and Sons. In this were well-grown Codiaeums and Dracaenas, and many Caladiums, of which the chief sorts were Mrs. C. Cooper, William Manning, Red Ensign and Triomphe de Comte, which have large, reddish leaves; Mrs. John Laing, Harry Coleman and Mercedes d'Argent, green and white-leaved varieties, and the nearly transparent Rio de Janeiro. Along the front, Messrs. John Peed and Sons placed very excellent plants of Gloxinia, Streptocarpus and Begonias, with Hydrangeas, Dracaenas and Lilium longiflorum var. giganteum in the middle distance.

The exhibit of Messrs. J. Carter and Co. was severely formal in outline, but the beauty of the many plants and their artistic placing successfully prevented any stiffness in effect. An ample centre was edged with a perfect grass border and surrounded with the ideal gravel walk which, in turn, was contained within four grass-bounded sections, and altogether made a garden of charm, grace, dignity and restfulness. In the centre, the tent pole was masked by graceful Bamboos, Palms and Acer negundo variegata, while around this were grouped excellent plants of Salpiglossis, well-furnished with large flowers of delicate texture and exquisite veining.

In the outer sections there were circles of Hippeastrums, Clarkias and Streptocarpus, surrounded by Gloxinias and larger mounds of stellata Cinerarias and Calceolarias of both the large-flowered type and the graceful Clibrani. The necessary relief was given by occasional plants of Cocos plumosus, specimen Codiaeums (Crotons), and raised vases of Sweet Peas.

An enormous collection of splendid Hydrangeas was exhibited by Mr. H. J. Jones. This plant does not lend itself easily to effective grouping, but Mr. Jones contrived, with great success, to make a very fascinating display. The rich pink varieties were represented by Duchess of York, H. B. May, Queen Mary, D. B. Crane, Florence Bolt, a new variety of a charming soft shade of colour, and the deep pink Lord Lambourne. Chief among those of blue shades were Blue Prince and Vicomte de Vitraye. Other varieties of value were Madame de Vries, white with light flushing; David Ingamells, rich pink, with lighter centre, and Neidersachsen, pale blue.

Messrs. Dobbie and Co. made a large bank of their Perfection strain of Calceolaria, which well illustrated its great value. The many plants showed great cultural skill, and bore large-pouched flowers in many beautiful colours

Large masses of Cineraria stellata, hybrid Schizanthuses and double scarlet Clarkia formed the background of the extensive group of Messrs E. Webb and Son. With this background were displayed Salpiglossis, Primula obconica gigantea, Cineraria Matador, Nemesia strumosa varieties, Statice Suworowii and large-flowered Calceolarias.

A neat group of large-flowered Calceolarias was arranged by H. P. Russell, Esq. (gr. Mr. G. Tydeman), The Nine Gables, Bexley Heath.

A collection of double-flowered Begonias of the high quality now expected from them, was displayed by Messrs. Blackmore and Langdon. As is usual, the flowers surpassed the Camellia in size, and were of perfect form and delicate colouring. Chief among those of pink shades were Queen of the Belgians, Mrs. H. Moncrieff, Mrs. T. Crawford, Lady Ann, Mrs. Reginald Caulfield and Mrs. R. R. Anderson. Varieties of orange colouring were fairly numerous, and the most prominent were Irene Tambling, Florence Bigland and Lord Lambourne, while the chief yellows were Mrs. J. Davidson and Mrs. J. L. Rushton. Mrs. F. Bedford, a beautiful creamy-blush, Princess Victoria Louise, pale salmon; Albatross, white; Sir H. Wilson and C. E. Pearson, scarlets, were also of great beauty. Raised above these excellent varieties were some valuable basket Begonias, such as Gladys, red; Bertha, pale salmon; Mollie, blush, and Lena, scarlet.

Many trusses of Zonal Pelargoniums were set up by Mr. W. A. R. Clifton. The chief doubles were Genetrix, Madame A. Roseleur, Captain Hazel and Lave, while prominent among the singles were Mrs. F. J. Searles, Somerset Lad, Willingdon Gem, Drummer Boy and Prince of Wales.

Next to their Carnations, Messrs. Stuart Low and Co. grouped miscellaneous stove and greenhouse plants, including Anthuriums of considerable merit, the fascinating Bottle Brush tree, Metrosideros robusta, Hippeastrums of merit, Gloriosa superba, several very floriferous Mimosas (Acacias) and Magnolias.

Formal and Other Gardens.

An unusual, yet very attractive garden was planned and made by Mr. Ernest Dixon. At the entrance was a wall garden with a sunken centre which provided fascinating circular recesses with stone seats for rest and contemplation. The raised portion was planted pleasantly with seasonable shrubs and border flowers, among which Alyssum saxatile in variety and Cheiranthus Allionii gave breadths of welcome colour.

A square, paved forecourt made by the London Gardens was planted with a dwarf Ageratum and pot-grown Mignonette, while the window boxes contained Hydrangeas.

Mr. James Macdonald made one of his perfect grass gardens with a central pool containing a leaden figure and enclosed by a neat Yew hedge. The lawn grass was of the richest green and innocent of even the most minute weed. Many of the best ornamental grasses added to the garden's attraction, and the four beds of Phleum pratense aurea and the six-feet-high plants of Eulalia japonica testified to the cultural skill of the growers.

An exceedingly bright and attractive garden of St. Brigid Anemones was laid out by Messrs. Reamsbottom. Except for the centre, which was of mixed colours, the beds were filled with distinct varieties. Victory, a glowing scarlet, with a pure white zone, made a great show, while the satiny-mauve Dorothy Plunket was exceedingly effective.

The Japanese garden designed and made by Messrs. W. Wood and Son, struck a new note at Chelsea and attracted a deal of deserved admiration (Fig. 198). An air of agreeable spaciousness pervaded the garden, which, also, so far as Europeans may judge, was characteristic. In any case it included the conventional temple, while the Seat of Honour, Prayer Stone and other essentials were included. The grassy hills and mounds were well-balanced, and almost all the trees and shrubs were of Japanese extraction.

At first sight, the garden which Messrs. William Cutbush and Son made gave the impression of being the featured golf putting-green beautiful, but it was much more than that. The influence was obviously Japanese. In the distance, green-capped hills yielded a tumbling stream which became a placid pool margined with Primulas, Spiraeas, Funkias, Brooms and other flowering shrubs and plants. The surrounding undulations were well handled, and the spacious shrubbery borders were valuable features.

An especially bright and effective garden was designed and planted by Messrs. J. Cheal and Sons. A central, rectangular lawn, bordered with flagstones and flanked with formal beds of the delightful dwarf Polyantha Roses, led to an ornate, brick-pillared pergola with an Andalusian well. Ample climbing Roses and Vines festooned the pergola, and behind was a generous border of flowering shrubs. The garden was bounded with long borders of various flowering shrubs, including a good variety of Japanese Azaleas, and such border plants as Astilbes, Verbenas, Funkias, Ranunculuses and Primulas.

The En-Tout-Cas Co. had a neat and pleasing garden with a tiled garden house on a raised terrace and borders of Mollis Azaleas. There were also a sunken lawn and an attractive curved pool.

The country garden made by Messrs. Baggesen included many appropriate features, such as the Heather-thatched corner seat, the dove-cote, the pump and trough, and the bee-skep. A winding stream with agreeable planting and borders of flowering shrubs were all in pleasant association.

A prim formality was the keynote of the garden laid out by the Garden Services. Paved paths and terraces, a semi-circular pool, level lawn and a rectangular garden house were the principal features, and these were enclosed by regular, undulating brick walls and borders of evergreen trees and shrubs.

A circular, thatched garden house, set in a curved stone terrace, with timber surrounds gave unto a pool into which a pair of gargantuan toads spouted streams of water, were the dominant feature of the garden of Messrs. Wallace and Co. (Fig. 196). Wistarias set in front of the garden house were singularly effective, while sufficient colour was provided by Azaleas of the various types, Rhododendrons, Brooms and Japanese Maples. There was a good background of evergreen shrubs, and in the corner behind the terrace were large specimens of Rhododendron and Magnolia, all in full bloom.

A pleasant and restful, yet flowery, garden was contributed by Messrs. W. H. Gaze and Son. The plaster-faced flint walls, lightly veiled with climbing Roses and Vines, and the well-filled flower borders, gave an old-world established air to the garden. The sunken centre contained a smooth green lawn and low retaining walls supporting an excellent border of blue and mauve flowers. As befits an exhibition garden, one end was open to provide a view of the whole; this had a neat Yew hedge, while at the further end the wall was broken by an artistic and handsome hammered iron gate.

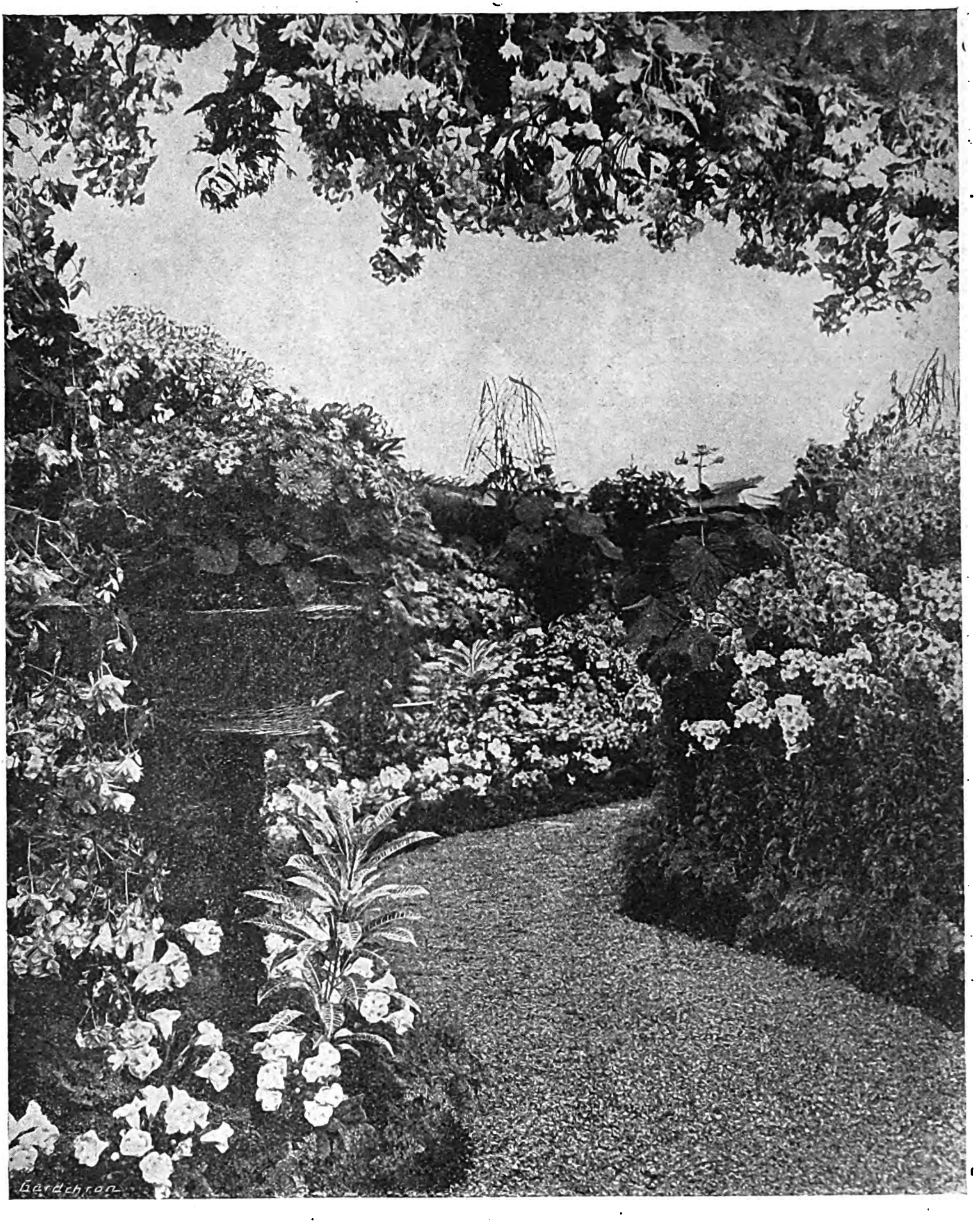

FIG. 197.—CHELSEA SHOW: PART OF MESSRS. SUTTON AND SONS' GROUP, AWARDED THE SHERWOOD CUP AS THE MOST MERITORIOUS EXHIBIT.

Irises.

Among the most charming displays in the tents was the Iris garden, in the form of a large circular bed and two triangular ones, flanked with turf, arranged by Messrs. G. Bunyard, and Co., Ltd. The circular bed was composed of numerous well-flowered plants of such lovely sorts as the lavender-blue Lady Foster, Yeoman, Misa, the popular Prospero, large and beautifully coloured; Magnifica, rose-lavender, with reddish-purple falls; Rosalind, lavender-pink; Luna, Glamour, Thuban, a new seedling, pale lavender-blue with purplish falls; Capella, also new, and Ambassadeur. In the triangular beds, an outstanding seedling was Merope with strong, erect stems bearing large flowers, with smoky maroon-tinted, pale standards, and velvety, reddish-purple falls; other good sorts including 27th Avril, the delicately coloured Souvenir de Letitia Michaud, Tenebrae, Flaming Sword, Vanessa, smoky-yellow with reddish-purple shaded falls, and not two feet high; the lovely Corrida; Lorely, Evadne, of exceptionally delicate shading, purplish-pink, light and suffused with gold; Princess V. Louisa, Amber, Leonata, Asia, and the richly-coloured, purple Souvenir de Madame Gaudichau. The above-mentioned represent but a few of the choicest where all were choice and of great merit.

Irises were included in Messrs. Wallaces' magnificent display of various subjects, two triangular beds being devoted to them, and both Flag and bulbous sorts being represented; among the former were Darius, Quaker Lady, Musa, pallida var. dalmatica, Sapphire, very good; Conchobar, Bruno, Sindjhat, the small flowered, golden Mrs. Neubronner; Souvenir de Mdme. Gaudichau, Duke of Bedford, Georgia, Germaine Perthuis, and Duke of Bedford, while the bulbous Irises embraced numerous varieties in shades of white, blue and yellow.

Bearded Irises were not in evidence in the display set up by Messrs. George G. Whitelegg, the lateness of the season probably being responsible for their absence; nor were they very abundant in the group of Irises from the Orpington Nurseries Co., Ltd., their place being taken by bulbous Irises, which, however gave colour to the displays.

The Bearded Irises in the former group embraced Ballerine, Ann Page, Seedling No. 37d, Lord of June, Halo, and a few others, the bulbous sorts displayed being British Queen, white; Imperator, Baron von Everdingen, white and yellow; and Cajanus, golden-yellow.

Irises of the Pumila section, including such free-flowering sorts as I. pumila var. cyanea, I. p. var. Snowcap, and I. p. var. Orange Queen, were included in the Orpington display, good Bearded sorts being Fro, Wedgwood, Tenebrae, Marquisette, Shekinah, Harmony, Magenta, Duchess Sarah and Gabriel, all very choice; among the most striking bulbous varieties we noted Cornelia van Everdingen, Yellow Queen Imperator and White Excelsior.

Carnations.

The Carnation specialists were again responsible for a grand display of these popular flowers, several magnificent groups attracting a great deal of attention.

As usual, Messrs. ALLWOOD BROS. were represented by a grand exhibit which comprised a circular mass of Perpetual-flowering Carnations, and two charming, triangular beds, supported by rock walls, of Border and Allwoodii sorts. Fine blooms of Maud Allwood, in massed formation, formed a central pillar in the display of Perpetual-flowering sorts, while the hanging baskets and large vases of the fragrant Mrs. A. J. Cobb, in splendid condition, added charm to the display. Wivelsfield Buttercup, Laddie, Mary Allwood, Wivelsfield Claret Improved, Rapture, Red Laddie, very fine, Guy Allwood, Spectrum and Circe Improved, now recognised as among the élite of the section, were shown in perfect condition, Guy Allwood, a lovely salmon-pink, being worthy of special note. White varieties were prominent in White Pearl and Wivelsfield White, while other good sorts which made special appeal were Shot Silk, Topsy, Butterfly, white, flecked red; Edward Allwood, Lady Hindlip and Harmony. Among Dianthus Allwoodii varieties, and they were many, we noted Madge, Beatrice, with comparatively large, bright pink blooms; Ann, Peggy, Joan, Prudence, palest shell-pink; Harold, pure white; Alfred, also white; Bryan, Pat, rich rose-red; Sybil, light pink; Barbara, Esther, Betty, pure white, with a red central zone; Maud, pale salmon-pink, and Sylvia; while among the many beautiful Border Carnations in this attractive display were Mary Murray, primrose-yellow; Lieut. Shackleton, Elaine; pure white; Grenadier, scarlet; Glamour, primrose-yellow; John Knox, deep crimson; Bookham White, Border Yellow. Rosetta, rich rose-pink; Peach Blossom, Orangeman, and Sussex Morn, Sussex Avondale, Sussex Scarlet, Sussex Pink, Sussex Old Rose, Sussex Yeoman, Sussex Purple and Sussex Maroon, classed as Perpetual Border Carnations. Also included in this exhibit were dwarf alpine pinks, among the most floriferous and attractive being Ariel, Wendy, Tinkerbell, Oberon, Pan and Titania. A very meritorious display. Messrs. Allwood Bros. also had a small group of specimen plants of their annual Sweet Wivelsfield, a plant with a future.

Messrs. LOWE AND GIBSON, LTD., had a charmingly arranged display of hardy Border Carnations, in many beautiful sorts, including Mary Murray, Eldorado, Border Yellow, Ida Gray, Royal Clove, Bookham Scarlet, Victory, Lady Hermione, Idwen, Mrs. J. L. Gibson, Linkman, Elaine and Bookham Rose, in such exquisite and varied colour shades as to make description extremely difficult; while Mr. C. H. HERBERT had a small collection of choice garden Pinks, among which we noted Othello, rich crimson and delightfully fragrant; Delight, pale salmon-pink; The Bride, pure white; Cupid, May Queen, Jester, Mrs. Herbert, Prince of Orange, large, bright salmon-pink; Falcon, Supreme, Cerise Queen and Model.

Perpetual-flowering Carnations were attractively staged by Messrs. STUART LOW AND Co., the centre of their large bank of magnificent blooms being composed of the beautiful pink Eileen Low and the rich crimson Philip Sassoon; other grand sorts being Spectrum, R. A. Nicholson, a bright scarlet 1929 novelty; White Pearl, Brilliant, Thomas Ives, Happidais, Topsy, Mrs. Ward Improved, and the lovely Malmaison, Mrs. Charlotte Knollys.

At one end of the second tent, Messrs. C. ENGELMANN, LTD., had a large, semi-circular bank of Perpetual-flowering Carnations of commanding appearance. At the back were enormous vases of such lovely sorts as Rouge, Laddie, Orange Sunstar, Topsy, Saffron—which occupied pride of place in the centre—and Red Laddie, while dotted about this exhibit were lovely vases of Mab, Hebe, Nigger, Citron, Spectrum, Circe Improved, Coral Glow, Sunny and Startler, the foreground being composed of such choice sorts as Ivory, white, with fimbriated petals; Yankee Girl, Velvet, Paleth, Wanda Mary Allwood, Arctic, Aviator, Marchioness of Salisbury, Wivelsfield White, Mrs. A. J. Cobb, Sceptre and Improved Ward. A very charming display, deserving of much praise.

Another attractive group of Carnations was set up by Messrs. KEITH, LUXFORD AND Co., who made special features of White Wonder, Topsy, Cupid, Coquette and Enchantress Supreme, other good sorts being Spectrum, Improved Ward, Saffron, Edward Allwood, Spectrum, Sir Philip Sassoon and Mikado.

Sweet Peas.

In the view of many experts the season has been far from favourable for Sweet Peas, both those grown under glass and the out-of-door plants; but taking the magnificent spikes which were shown at Chelsea as a criterion, their fears were unfounded, for the many blooms were of superb quality.

A magnificent stand of Sweet Peas was set up by Messrs. ROBERT BOLTON AND SON. A fifty feet run of space was filled with flowers of scintillating loveliness and of surpassing excellence. The varieties of orange colouring were very prominent, and these included Gold Crest, Mammoth, Colorado, and a beautiful seedling. The pink shades were well represented by Royal Pink, Cambria, Beatall, Magnet, and the glowing Mrs. A. Searles. Bluebell and the paler Powerscourt, with the richly-coloured Royal Mauve gave the needed deeper tone, and the essential white was the variety Model.

The prominent position in his collection was given by Mr. J. STEVENSON to the vivid variety Lustre. Other sorts of moment were Honour, the well-known Bullion, Purity and Treasure, while at one end were several large bowls of the beautiful Charm.

A pleasing display of Sweet Peas was made by Messrs. ALEX. DICKSON AND SONS who had large stands of Hawlmark Salmon Pink, George Shawyer, Mrs. A. Searles and Hawlmark Cream. Other good varieties in this collection were the purple Olympia, Grenadier, of rich scarlet colour, the lavender Powerscourt, that good garden variety Pinkie, Gold Crest and the Picotee-edged Sunkist.

A memorable display of Sweet Peas was arranged by Messrs. DOBBIE AND Co. Among the novelties were Idyl, cream-pink; Miss Delight, of the palest salmon-pink shading, and Clarion. In the middle background three vases of Pinkie well illustrated its great decorative value, while separated from it by the creamy Daffodil was a glowing mass of Flamingo. At either end were vases of Royal Sovereign, perhaps the richest orange variety, and the nearly perfect Bluebird; other varieties worthy of more than passing attention were Mary Rose, Hero, Lilac Queen, Charming, Prince of Orange, Youth, Magnet, Powerscourt and many more.

In their charming general exhibit, Messrs. CARTER AND Co. included many vases of beautiful Sweet Peas. Of the many excellent varieties we especially admired the rich orange Royal Sovereign, the purity of the white Invincible, Mandalay, of glowing rose-purple shade; the dazzling scarlet Grenadier, the pink-shaded Magnet, and the mauve Princess Patricia

Roses.

These, like the Orchids, had a tent specially devoted to them, an arrangement which again met with general approval, for the Rose tent presented a very attractive appearance, with beds of Polyantha sorts down the centre, and the walls lined with banks of, in most instances, blooms in very good condition.

The beds in the centre—two large rectangular ones—were laid out by Messrs. W. CUTBUSH AND SON, LTD., and were charming, consisting of numerous small beds, in formal design, each filled with magnificent specimens of floriferous Polyantha Roses, with here and there, rising above them, shapely standards of the same varieties, noteworthy among which were Juliana, flesh pink; Mrs. A. Hudij, flaming orange-scarlet; Chatillon Rose, Madame A. Kluis, deep rose; Yvonne Rabier, white; Ellen Poulson, Magnifique, Else Poulson, Lindbergh, bright salmon-pink; Scarlet Leader, Sunshine, Kersbergen, scarlet; Rudolf Kluis, bright red, and the brilliant Golden Salmon.

The corner group of Roses from the MADRESFIELD GARDENS, LTD., consisted chiefly of Polyantha varieties, such grand sorts as Lady Reading, Golden Salmon, Princess Juliana, Magnifique, Edith Cavell, Orange Perfection, Mary Casant, Locarno and Kersbergen, being well represented, while notable sorts, also Polyantha varieties, included in the charmingly arranged, floriferous group set up by Mr. J. H. PEMBERTON, included Magnifique, Edith Cavell, Kersbergen, Golden Salmon, White Echo, Superba and Ideal, with good standard specimens of the above varieties, together with Orleans, Lady Reading, Fratcheur and Ellen Poulson.

Messrs. DE RUITER showed specimen plants of the vivid, salmon-scarlet coloured Polyantha Rose Gloria Mundi, and Messrs. A. REEVE AND Co. had good plants of a fine salmon-pink dwarf Polyantha variety named Little Miss Dorrit.

Mr. GEORGE PRINCE included numerous Polyantha sorts in his group, which also contained excellent blooms of Shot Silk; the beautiful large, white-flowered Elizabeth Arden; Dame Edith Helen, Pax, Madame Butterfly, and the *Daily Mail* Scented Rose.

Mr. ELISHA J. HICKS arranged a very attractive exhibit in the form of mounds of Polyantha Roses, such as Golden Salmon, Minnie Kersbergen, Superba, Orange King and Frank Leddy, rising from a foreground of grand blooms of such lovely sorts as Dame E. Helen, Craigwell, Golden Gleam, Sunningdale, Mrs. Henry Morse and Charles P. Kilham. Rising above these were pillars of Mamam Cochet, White Maman Cochet, Mrs. F. Hobbs, and Lady Plymouth, while at the back were various grand specimen climbing sorts.

Another grand display of Roses was that arranged by Messrs. B. CANT AND SONS, LTD., who had a large corner bank of blooms. The background was of rambler sorts, and in front of these were massed heavily-flowered bushes of Hilda, Mrs. Beatty, Padre, Lady Wakefield, Madame Butterfly and Roselandia, while the front of the exhibit was lined with grand blooms of such choice Roses as Giant King, Phoebe, Covent Garden, Sovereign, and the large-petalled, single, golden-flowered Cecil.

In Messrs. CHAPLIN BROS.' enormous group, the background consisted of grand specimens of such excellent rambler Roses as Hiawatha, Dorothy Perkins, White Dorothy Perkins and Chaplin's Pink Climber. There were splendid standards of Excelsa and Lady Gay, and large mounds of W. E. Chaplin, Lady Inchiquin, Conqueror and others, while the groundwork of the display was of massed, floriferous specimens of dwarf Polyantha sorts, notably White Echo, Kersbergen, Golden Salmon, very fine, Locarno, Ideal and Lindbergh.

Messrs. WALTER EASLEA AND SONS, LTD., had a charming display on tabling, with ramblers at the back, the notable sorts being Red Explorer and Dorothy Perkins, while among the standards, the specimens of Orleans and La Reine Elizabeth were very fine, as also was the central mass of the dwarf Polyantha Golden Salmon, together with large vases of Charles P. Kilham, Florence Izzard, Florex and Mrs. Beckwith.

In the massed bank of Roses set up by Messrs. ALEX. DICKSON AND SONS, LTD., the most striking sorts, of which there were large baskets of specimen blooms, were Lucie Marie, Gladys Berskin, Swansdown, Edith Nellie Perkins, Flamingo, Imprés, Barbara Richards, which received an Award of Merit, and the beautiful, yellow-flowered Canary.

One of the grandest exhibits in the Rose tent was the display arranged by Messrs. FRANK CANT AND Co., in the form of a long bank, with Ramblers as a background, most attractive among these being Excelsa, Mary Hicks and Minnehaha. They had grand bushes of Mrs. A. R. Barraclough, Lady Inchiquin, Lady Forteviot, Margaret McGredy, Sir David Davis, Shot Silk, Patience and Mabel Morse, while the front was lined with Polyantha sorts, such as Golden Salmon, Kersbergen, White Echo, Paris, Superba and Orange Perfection. A very charming group.

Ferns.

Mr. **Amos Perry** was, as usual, the only exhibitor of Ferns, but his group, in the form of a square mound, crowned with grand specimen plants of such beautiful Ferns as Struthiopteris pennsylvanica and S. germanica, both with large, gracefully-spreading fronds, was very attractive and refreshing in its cool appearance. It included several of the beautiful Lastreas, notably L. japonica, L. felix mas var. fluctuosa gracilio, L. f. m. var. cristata, L. f. m. var. crispa; Royal Ferns such as Osmunda gracilis and O. regalis var. purpurascens; and other choice Ferns, notable among which were Adiantum pedatum, Athyricum plumosum var. elegans, O. p. var. polydactylum, A. regale, A. gemmatum, A. cristatum var. purpurascens, A. Craigii, A. setigerum var. cristatum, A. densum and A. laciniatum var. ramulosum, Polystichum aculeatum var. acutilobum and Adiantum flabellatum.

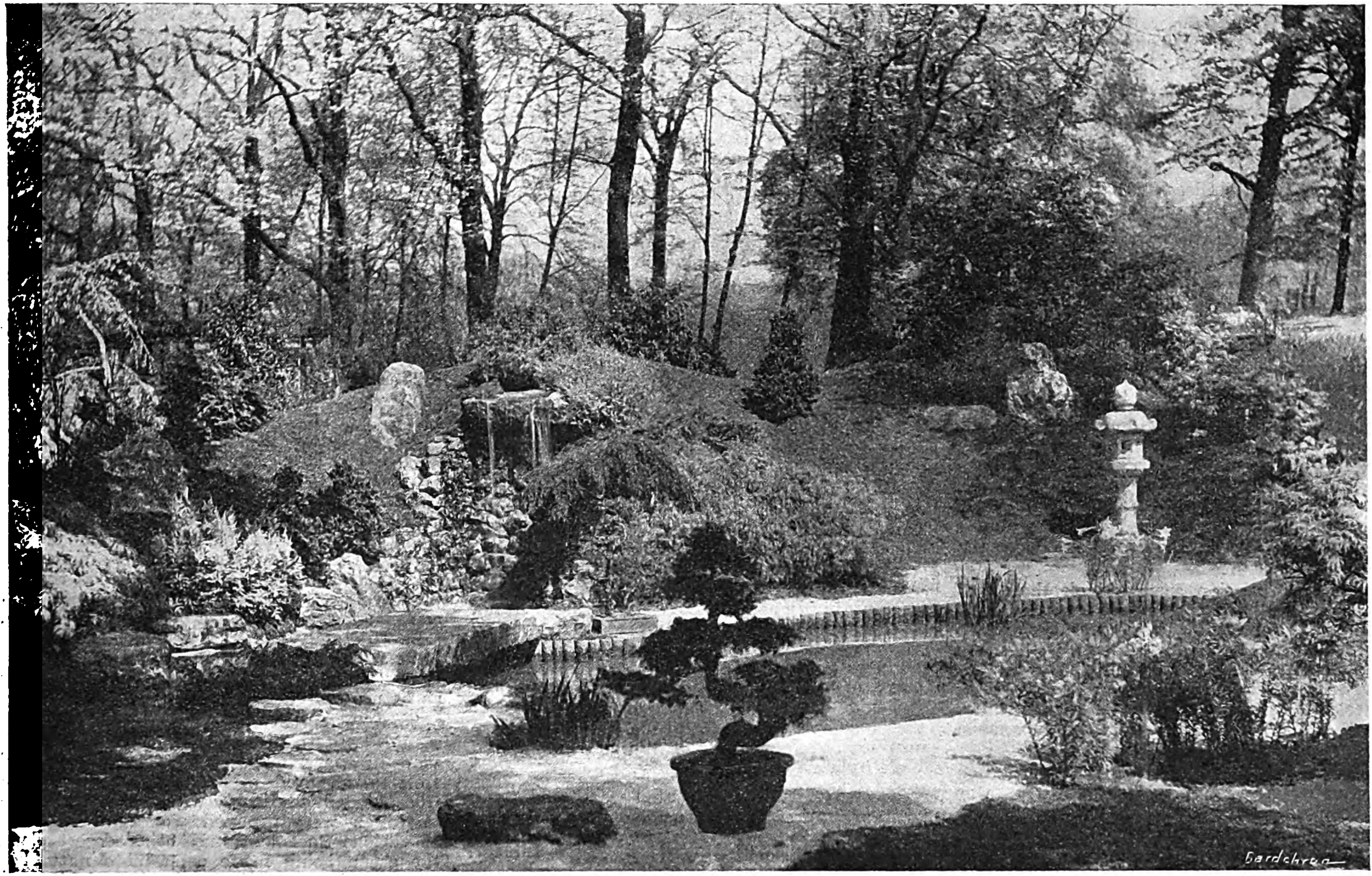

FIG. 198.—CHELSEA SHOW: MESSRS. W. WOOD AND SON'S JAPANESE GARDEN.

Rock Gardens on Tables.

In the history of Chelsea Shows nothing, perhaps, has shown greater development than the displays of rock gardening, and this remark applies equally as much to the displays on tables in the tents as to the larger demonstrations in the open. When one compares the way in which alpines used to be displayed at the shows in the Temple Gardens with what is now seen at Chelsea, the improvement can be fully appreciated, and the artistic arrangement displayed appealed particularly to those who have to be less ambitious than their fellows in the possession and furnishing of a rock garden, insomuch as they have to be content with something small.

There was a marked boldness about the display set up by **Lady Aberconway** and the Hon. **H. D. McLaren**, Bodnant, Tal-y-Cafn, North Wales, and here choice Rhododendrons, including R. Wiltonii and R. callimorphum with Azaleas Vaseyi and others were used as a background. In front, weathered stone was used with pleasing effect to make more natural the appearance of clumps of Meconopsis grandis and integrifolia, and Primula schionantha and P. Brownii, Cypripediums californicum, pubescens and others. It is not surprising that this extremely interesting exhibit of flowers, many of them rare, attracted a considerable amount of attention.

There seemed to be rather a shortage of flowering plants, and too many of the Coniferous family in the space occupied by Messrs. **John Scott and Co.**, and despite the tasteful placing of the natural stone used, the exhibit had rather a sombre appearance, which would have been obviated by the inclusion of more flowering subjects.

A good deal of taste was displayed by Mr. **Gavin Jones** in the arrangement of his rock garden. Stone was used in quantity without being overdone, and an ancient-looking Fir tree in the centre seemed to be by no means out of place. Peeping out of the pockets between the rocks were dainty little Phloxes, Primulas and Violas, with which the dense blue of Gentiana acaulis made a pleasing contrast. This is to mention only a few of the dainty little rock plants included in the exhibit.

Rather flat was the impression given by the rock garden arranged by Messrs. **W. E. T. Ingwersen, Ltd.**, and the stone employed looked as if it lacked the influence of the weather. The flowering plants and tiny Conifers were, nevertheless, nicely arranged, dwarf Phloxes, Primulas and Violas being particularly noticeable.

Mr. **G. Reuthe** set up a rock garden which did him infinite credit, and the way in which moss-covered stones, Conifers and flowering plants were arranged made the exhibit an extremely attractive one. Amongst the many things displayed were clumps of dwarf Azaleas and Cytisus kewensis, Irises in variety, Phlox setacea vars., Brightness and R. C. Chambers, Trollius in variety, with dainty little Saxifragas, Violas and many interesting gems of the alpine family.

Messrs. **J. Cheal and Sons, Ltd.**, occupied one side of a table with a choice collection of alpine plants interspersed with stones and making a pleasing colour effect. Aubrietias in variety were very pleasing, and the same can be stated of the Phloxes in variety, miniature Irises and Gentians. There was much indeed in this comparatively small display to interest any lover of rock plants.

A graceful Japanese Maple in the centre was a feature of the rock garden arranged by Mr. **G. E. P. Wood**, and around it, arranged in pleasing manner, were groups of many interesting plants which included Linum Lewisii, dwarf Irises and Phloxes, Aubrietias in variety, Verbenas, Violas in different colours, and the tiniest of pink Roses. Considered from any angle, this display stood out as being one of the most effective.

Messrs. **Tuckers, Ltd.**, used natural stone and granite chippings quite effectively in setting out their display of rock plants, among which were Primula japonica and others, Saxifraga, primuloides and S. Diana, Asperula suberosa, Polemonium reptans, Androsace lactea, Phlox Nelsoni, and the white Iberis Little Gem. Among the taller subjects, Aquilegia alpina and Phlox divaricata var. Laphami were used with pleasing effect.

Primulas of hardy character were the main feature of the bold display made by Messrs. Oliver and Hunter, and among the species were P. japonica, P. chionantha and P. sikkimensis. Meconopsis betonicifolia, and integrifolia made a pleasing display, and the rare Primula Giraldiana alba called for special comment. In clumps surrounding the extremely interesting collection of Primulas were many choice and dwarf alpines.

There was something daintily effective about the manner in which Mr. K. Therkildsen set up his small collection of plants amid stones and small chippings. Primula cortusoides, Aquilegia glandulosa, Saxifraga Cotyledon var. norvigica and Primula japonica were among the features of the exhibit, and another was that all the names were so plainly written that they could be easily read. Some of the exhibitors of alpines might take a hint from this. The Owermoigne Nurseries occupied a small space of tabling, with a collection of interesting plants in which Irises lutea and I. gracilis, Anemone fulgens and Armeria Merlin were quite effective.

The choice little Phloxes subulata rosea, Alice Wilson, Vivid, Little Dot and others were, in themselves, a feature of the interesting rock garden which was arranged with taste by Messrs. Maxwell and Beale. Other plants which attracted attention were Lithospermum Heavenly Blue, Achillea King Edward and a collection of hardy Primulas and Dodecatheons.

Messrs. W. Keep and Co. made a bold display with Violas in the pink of flowering condition, some of them in mass and others arranged among the stones which formed the rockery. One of the most effective of the latter was the very free-flowering, yellow Golden Wave.

There was a striking boldness about the way Messrs. Wells, Junr. arranged their rock plants in masses with not too much stone showing. Among these masses were Potentilla fragiformis, very effective, Lithospermum Heavenly Blue, Aubrietias The Queen and Lilac Queen, Gentianas verna and acaulis, Phloxes Samson and Douglasii, and nivalis, as well as alpine Poppies, Violas Clarence Elliott and Black Knight, Mimulus Whitecroft Scarlet and Primulas chrysopa, secundifolia and sibirica.

Alpine plants never seem to look their best when shown in pots, but nevertheless a good deal of the material which comprised the exhibit from C. Kirch, Esq., Beckenham, Kent, was extremely interesting. Particularly so were the many different and charming varieties of Androsaces, Saxifragas, Oxalis and Gypsophilas. In fact, the word choice seemed to be written all over this display.

Except that it was a little flat, the rock garden displayed by Messrs. M. Prichard and Son was very pleasing. Plants in bewildering variety were included and somewhat out of the common were Kalmia glauca, Lithospermum intermedium, Potentilla aurea, Edraianthus serpyllifolius var. major, Gazania montana, Haberlea rhodopensis and Rosa pumila alpina. Summed up in a few words, there was a wealth of material in this exhibit to interest lovers of rock plants.

Blocks of weathered stone were liberally and naturally used in making the rock garden from Messrs. Clarence Elliott, Ltd., but to state that the expanses of green moss with single plants made to look as if they were growing in it, were rather overdone, is only fair criticism. Very natural, however, were the little clumps of Phloxes Vivid, Douglasii, var. Lilac Queen, while Sempervivum Arachnoideum and Androsace Laggeri filling up crevices between stones, as well as Sedum spathulifolium purpureum, looked exactly as if they had grown there.

Japanese Maples, Azaleas and Cytisus in variety formed the centre of the display made by Messrs. Bowell and Skarratt, and sloping down to the edge of the table on either side were many dainty plants, noticeable among which were Polygala calcarea, Tulipa Batalinii, hardy Primulas, Cypripedium pubescens, Polemonium reptans, Phloxes and Saxifragas.

In the semi-rock garden exhibit which came from Messrs. Barr and Sons there were collections of Irises, including Curiosity, Burgundy, cristata, Ditton Purple and others, as well as Aquilegia glandulosa, Dodecatheon Belle Mauve, Polyanthuses, Aubrietias, Saxifragas and Trollius grandiflorus, the whole making a highly pleasing display.

Messrs. G. A. Clark occupied the end of one table with an exhibit which would have been more effective if it had been a little less crowded. Features in the display were Daphne Cneorum major, Meconopsis Baileyi and Phlox canadensis. A collection of little alpines in small pots which were only partially hidden by green moss was shown by Messrs. H. W. Jeans and R. M. Pritchard, but the method of the arrangement did not add to the attractiveness. A mass of Phlox Douglassii var. Lilac Queen and another of Cardamine pratense plena were the chief features.

There was a familiarity about the stones used and the way the plants were arranged among them, in the rockery set up by Messrs. Backhouse which was small but highly pleasing. The dainty Cyclamen repandum album was shown to very great advantage, and other features were Gazania splendens, Primula Forrestii and Viola gracilis var. lutea.

Messrs. Bakers set up an exhibit which was well worthy of their reputation. Conspicuous in it were fine specimens of Primulas Florindae, chionantha, Red Hugh, secundiflora, Veitchii, Wardii and others, and interspersed among them was a great variety of charming and popular plants, not the least interesting of which was Pentstemon Scouleri.

Mr. H. Hemsley filled one side of tabling with a mixed exhibit in which Rhododendrons, Azaleas and Japanese Maples formed a background, with alpine plants in variety arranged in front. The collection of alpine plants set up in bank-like form by Messrs. Carlile made a bright show, but it seemed as if an attempt had been made to crowd in too much material.

Masses of the yellow Linum arboreum, Aubrietias gloriosa, Dr. Mules, Church Knowle, Bonfire, with Phloxes Model and Douglasii, Erinus Dr. Harnele, Primula farinosa and Iris cristata, were features in a highly attractive rock garden exhibit arranged by Messrs. J. Waterer, Sons and Crisp, Ltd. Stone was used with effect, and the whole display was highly attractive. Quite a pleasing arrangement of rock plants was shown by Mr. Stephens Sims, and conspicuous in it were clumps of Saxifragas Edna, Sir Douglas Haig, Mrs. E. Piper and sanguinea superba. Iris pumila cyanea was also an attractive feature of the exhibit. Messrs. J. Robinson and Son set up a highly attractive rock garden, the chief feature in which was bold clumps of Iberis sempervirens, Phlox setacea var. atropurpurea, Viola gracilis var. Clarence Elliott and Viola hybrida Crimson Beauty.

Mr. G. G. Whitelegg used weathered stone with very great advantage to make natural and homelike, showy clumps of Phlox Vivid, Saxifraga Pompadour, Iberis Little Gem, Gentiana acaulis, Erinus carmineus, Armeria nana and other favourites. This was a very interesting exhibit.

Saxifraga pyramidalis made an effective centrepiece for a very charming collection of rock plants staged by Messrs. W. Wood and Son. Without being in any way overcrowded, the compact clumps of Saxifraga notata, Primulas Cockburniana, farinosa, and Craven Gem, and Phloxes stolonifera, lilacina, Vivid and Brightness showed to great advantage. Charming also were Anemone sylvestris, Potentilla aurea, and Aubrietias J. S. Baker, Russell's Crimson and rosea splendens.

Messrs. Kent, Brydon and Haigh used considerable taste in arranging their miniature rock garden, the chief feature of which was a clump of the yellow-flowered Primula Barrowby Gem, which was not included in many of the other exhibits. Primula sino-plantaginea was another plant in this collection which attracted considerable attention. Cytisus in variety, dwarf Azaleas, Violas, Primulas, Irises and other plants arranged in a pleasing manner, made up the exhibit staged by Mr. P. Gardner.

Small, but quite unique in character, was the rock garden, with water, set up by Mrs. Milford, Chedworth, Gloucestershire, and the Cotswold stone was used tastefully in making a temporary home for Phloxes, Gentians, Primulas, Incarvilleas and other plants.

While there was nothing out of the ordinary in the plants shown by the Misses K. and E. Hopkins in their rock garden arrangement, the rocks were employed judiciously in giving the exhibit a natural appearance.

Messrs. H. Langridge and Co. are to be commended on the way they used weathered stone in the making of their rock garden, and a pool of water in front had a very natural appearance. Conspicuous among the flowering subjects were Phloxes, Violas, Primulas, Potentillas, Aubrietias and Linum arboreum.

Saxifraga pyramidalis was the chief feature in the rock garden set up by Messrs. W. H. Rogers and Son, but pleasing also were clumps of Iris cristata and choice collections of Sempervirens, Antennarias, Phloxes and Violas.

The Central Garden Supplies occupied the end of one table with a collection of alpine plants arranged in undulating form, but with green moss as a groundwork, and without the use of stone. The display was attractive, as it differed in the character of the lay-out from other exhibits of similar character in other respects.

The stone used by Messrs. Pulham and Son in their rock garden had a very natural appearance, but a few more flowering plants in the crevices would have made the effect more pleasing. In making their rock garden, Messrs. Casburn and Welch used big stones with considerable advantage. The soil was hidden by small granite chippings, and the clumps of Campanula Stevenii, Androsace yunnanensis, Phlox amoena, Asperula suberosa and Viola Bluestone presented a pleasing and natural appearance.

Californian Plants.

Never before has such an exhibit as that staged by Mrs. A. Sherman Hoyt, of the California Conservation Committee of the Garden Club of America, been seen at a Chelsea Show, and nothing but unstinted praise is due to her for her remarkable display, which depicted typical Californian desert scenes, and which was housed in a special tent. It took the form of three sections, each partitioned off, representing, respectively, a "Desert Garden," "Death Valley," (Fig. 195) which is situated in eastern Central California; and a "Redwood Grove." These were so designed as to produce as natural an effect as possible.

The "Desert Garden," for instance, had a scenic background consisting of a composite view of the Armagosa, Mojave, and Colorado Deserts, situated in southern California, and this blended admirably with the actual garden in which were grouped wonderful specimens of various Succulent and other desert plants, the scene being made even more natural by the inclusion of typical animals and birds; in fact, no detail which would add to the natural effect seemed to have been overlooked—in the fore right-hand corner there was the small rock pool, common enough in novels, above which a notice, on a battered board, proclaimed "Poison Water; Beware," and bore the appropriate skull-and-cross-bones. And as to the plants with which this garden was furnished, there were lank, spiny specimens of Candlewood, Fouquieria splendens; large clumps, resting among rocks, of the Cluster Cactus, Echinocactus polycephalus, and tall specimens, of parched appearance, of Yuoca arborescens; with huge Prickly Pears, and several scrubby specimens of the grey-stemmed Creosote Bush, Larrea glutinosa, looking especially parched and lifeless. Other occupants of the desert which assisted in the making of this desert garden. were Atriplex himenelytra; the Organ Cactus, Lemaireocereus sp., Juniperus occidentalis, and the Smoke Tree, Dalia pubescens, described as, when in blossom, "a cloud of rich purple."

"Death Valley" presented an even more arid scene, due to the ground work of colemanite (crude borax), with a salt crater, lime stalactites, and other rock characteristics. Cacti were scattered about sparingly, and occupying a central position was a large Larrea glutinosa, around which prowled two coyotes, while the skeleton of a burro, and other smaller details, completed a scene which blended perfectly with the desert background, the whole being lit very effectively by artificial means.

Lastly, the Redwood Grove was admirable both from a scenic, and an educative point of view. The scene constituting the background represented a part of the Richardson Grove, and gave a very clear impression of the Redwood (Sequoia sempervirens) forest, the exhibit itself adding to the general interest of the scene by depicting the undergrowth met with under such conditions. There were various Ferns—Polystichum munitum, Woodwardia radicans, Gymnogramme triangularis, and the Liquorice Fern, Polypodium californicum, growing luxuriously about seedling Douglas Firs (Pseudotsuga Douglasii) in association with Ledums, in flower; Vacciniums, various species of Arctostaphylos, and numerous other subjects.

Mrs. A. Sherman Hoytis indeed to be congratulated upon the wonderful feature she provided, for the expense and labour entailed in transporting such an exhibit must have been enormous.

Narcissus and Tulip Committee.

Present: Mr. W. B. Cranfield (in the chair), Mr. L. J. Richardson, Mr. F. Herbert Chapman, Mr. W. Slinger, Rev. Rollo Meyer, Mr. W. Poupart, Mr. F. A. Secrett, Mr. H. G. Hawker, Mr. H. Smith, Mr. C. W. D. Needham, Sir A. Daniel Hall, Mr. Peter R. Barr, Mr. G. Monro, Mr. A. White and Mr. A. Simmonds, Secretary.

AWARDS OF MERIT.

Tulip Dorothy Ann.—This variety was exhibited by Sir **Daniel Hall**, Merton, Surrey, as a variety suitable for exhibition and cutting. It is a shapely English Tulip with broad, red segments, with a few white flecks and a white central zone.

T. Lady Ernle.—An early English variety for exhibition purposes, with segments of firm texture, orange-scarlet within, and paler, owing to the "bloom" on the outside. A very shapely bloom. Exhibited by Sir A. **Daniel Hall.**

T. Clos de Vougeot.—This was exhibited as a variety for cutting and garden decoration. It is an attractive Darwin variety, of good form, and with glossy, very deep crimson segments; also shown by Sir A. **Daniel Hall.**

Narcissus Khatmandu.—Exhibited as a Leedsii variety, as a show flower; this dainty Narcissus is pure white, both in the rather small perianth segments, and the frilled, flattened crown, which is, however, shaded in the centre with green. Shown by Mr. **Herbert Chapman.**

N. Triplex.—Another dainty little Narcissus, in this instance a semi-double one, exhibited by Mr. H. **Chapman.** The flowers are pure white, with spreading and slightly waved outer segments, and a flattened inner cluster of small ones.

N. Finality.—A lovely Poeticus Narcissus, with flowers of medium size, composed of slightly reflexed, waved, pure white perianth segments, and a small yellow cup, edged with red. It was exhibited as a variety suitable for cutting by Mr. F. A. **Secrett.**

N. May Glory.—Another Poeticus Narcissus, with oval, pure white perianth segments and a flattened, frilled, rich orange cup. Also shown by Mr. F. A. **Secrett.**

Tulips.

Tulips struck a dominant note in the tents, and among the many exhibits none was so striking as that set up by Messrs. **Barr and Sons**—a magnificent bank of flowers, in grand condition, seventy feet long and embracing some one-hundred-and-eighty varieties. The centre was composed of a mass of the richly-coloured Prince of Orange, with the palest pink Margaret on one side, and Amber on the other, while in front were large vases of Walter T. Ware, gold; Beauty of Bath, Zomerschoon, James Wild, an old English Tulip, flamed yellow and deep maroon, Fantasy and Erguste. To the right were splendid vases of Clara Butt, Ellen Willmott, primrose-yellow; Canada, pure white; Rev. Ewbank, Inglescombe Yellow, Fire Glow and Grand Monarque, while the left wing of this really magnificent display embraced Corydon, Farncombe Sanders, light scarlet and very striking; Capri, pale primrose; Bouton d'Or, golden-yellow; Louis XIV; Argo, orange and yellow; Themis, white; Baronne de la Tonnaye, rose-pink, shaded paler; and several flamed and Parrot Tulips, notably Lola, red and white; and Dainty Maid, reddish-purple and white. A very meritorious exhibit.

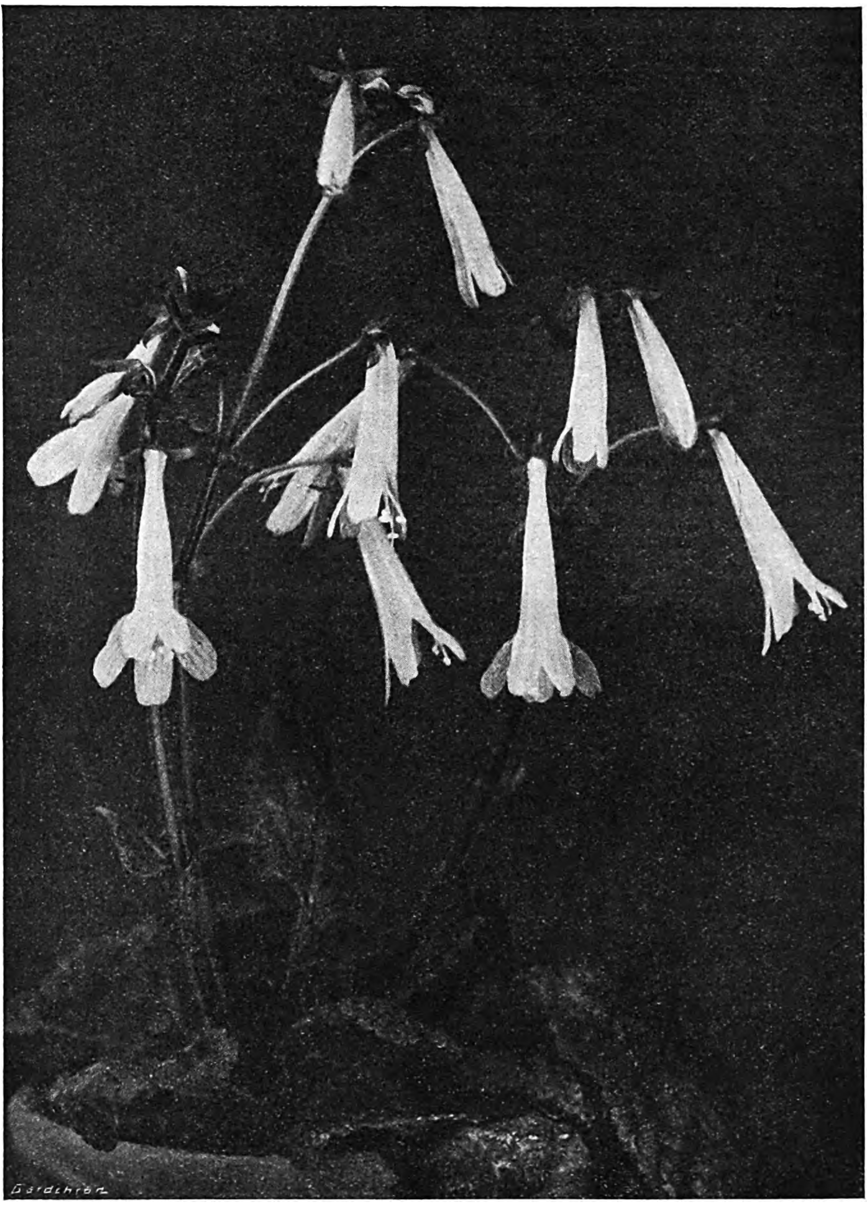

FIG. 189.—CHELSEA SHOW: OURISIA ALPINA.
R.H.S. Award of Merit, May 21. Flowers lilac-pink. Shown by Capt. McEacharn, Galloway House, Wigtownshire.

Another attractive group of Tulips was staged by Messrs. R. H. **Bath, Ltd.**, numerous varieties in many shades being represented by excellent blooms. At the back were tall sheaves of the quaint, bright yellow-flowered Tulip reflexa, together with Valentine, Olive, the scarlet-crimson Adolphe van der Hyde, and St. Simon, while other outstanding sorts in this collection included Le Reve, Inglescombe Yellow, Edith, Sir Trevor Lawrence, Mrs. Moon, Orient, Panorama, Baronne de la Tonnaye, Scarlet Perfection, and Aphrodite.

In the small but choice collection of Tulips displayed by Messrs. D. **Stewart and Son**, several beautiful Cottage and Darwin Tulips were represented, the most striking sorts being Prince of Orange, Amber, Louis XIV, Mrs. Moon and Golden Bronze, among cottage Tulips, and La Tulipe Noir, Rev. H. Ewbank, Viola, and Clara Butt, grand Darwin varieties.

Messrs. G. W. **Miller** had an interesting exhibit, composed chiefly of Tulips, but embracing also Polyanthuses, Trolliuses, such as Orange Princess, Earliest of All, Springfield Beauty, Etna and Queen Mary; Paeonies and various alpine plants, the most striking Tulips being Centenaire, Farncombe Sanders, Pride of Haarlem, and Clara Butt, together with City of Haarlem, Louise XIV, Bronze Queen, Ellen Willmott, Pink Beauty, Henry Clay, Faust, Nectar and King George V.

In the group set up by Mr. H. **Prins**, the three varieties of Narcissus—Fardiva, N. triandrus var. Snowball, and Belle Chinoise—the last-named being a pale biscuit-coloured, distinct Poetaz variety, acted as a foil to the numerous Tulips, noteworthy among which were Taurus, Lord Carnarvon, Oranges and Lemons, Mrs. Moon, Bronze Queen, Yardil, a cream, red-banded Darwin; Parisian Yellow, Vesta, palest primrose; Mississippi, vivid red; Mongolia, Artemis and Ohio.

Mr. **Herbert** G. **Longford** arranged numerous varieties of Tulips, well set off by

Lily of the Valley, bulbous Irises, and a few Narcissi, in a bank of moss and rocks, the outstanding Tulips being the golden-yellow Mr. Damis; Philippe de Commines, dark glossy crimson; Zary, yellow, feathered scarlet; Mrs. Moon, Boadicea, Columbus, Bronze Queen, Prince of Orange, Bronze Queen, and Alaska.

Tulips from Bronwylfa, St. Asaph, were also noteworthy, for, besides Tulipa Gesneriana var. lutea, Marconi, Maryanit, Farncombe Sanders, Zulu, and the lovely white Zwanenburg, in large sheaves, there were excellent vases of Inglescombe Yellow, Louis XIV, Carara, Cardinal Manning, Sophrosine, Mrs. Moon, La Merveille, Loveliness, andnumerous other lovely sorts.

Tulips, in excellent variety and good condition, were charmingly displayed by Mr. Alfred Dawkins, the background of light pillars of such beautiful sorts as William Copland, Farncombe Sanders, Madame Krelage, Laurentia, William Pitt, Princess Elizabeth, White Swan, and Professor Rawenhoff, and the corner pillars of Bartigon and Pride of Haarlem, acting as foils to the grand, yellow-flowered Mongolia, very fine; Louis XIV, Sieraad van Flora, rich rose; vitellina, pale primrose-yellow; Miss Blanch, Le Reve, Leda, Electra and many others, including several double-flowered sorts.

A small group of Tulips, but poorly arranged, was set up by Messrs. J. R. Pearson and Sons, Ltd., their best blooms, of excellent quality, being of Frans Hals, Mr. Damis, Fascist, Afterglow, Grenadier, Prince of the Netherlands, Dido and La Fiancee.

Tulips in splendid condition were also staged by the Rev. H. Rollo Meyer (gr. Mr. J. P. Izzard), Walton Rectory, Hertford, who had vases of grand blooms of Prince Albert, Boadicea, Baronne de la Tonnaye, Quaintness, Lucifer, Dom Pedro, Mrs. Moon and The President, together with Mongolia, Suson, Salaman, T. Gesneriana var. spathulata major, Isis, Inglescombe Pink, and Marconi.

The Welsh Bulb Fields were also represented by a charming collection of Tulips, tastefully arranged, the varieties constituting the background being King George V, Baronne de la Tonnaye, Prince of Wales, Jaune d'Oeuf and Inglescombe Pink, other noteworthy sorts including La Tulipe Noire, Cardinal Manning Louise de la Valiere, Marie Louise, Quaintness, T. Gesneriana var. lutea, Louis XIV., Ronald Gunn and Parisian Yellow.

In conjunction with Long-spurred Aquiligias, St. Brigid Anemones, and a few Irises, Messrs. Daniels Bros. had a bright display of Tulips, consisting of tall pillars of Feu Brilliant, Hamlet, Scarlet Perfection, Vesta, Siren, Mark Graaf of Baden, Zwanenburg, Adonis, Madame Lethiery, Nectar and other brilliantly coloured sorts, rising above baskets of grand blooms of Gen. de Wet, Pink Beauty, Don Pedro, Feu Ardent, Golden Bronze, La Tulipe Noire, Orient, Garibaldi and Preciosa, the whole making a very attractive display.

Fruit and Vegetable Committee.

Present: Mr. A. H. Pearson (in the chair), Mr. H. S. Rivers, Mr. J. Cheal, Mr. F. Bostock, Mr. J. Wilson, Mr. R. H. Hall, Mr. H. Prince, Mr. H. Basham, Mr. E. Neal, Mr. A. Bullock, Mr. G. Weston, Mr. F. Jordan, Mr. W. J. Earl, Mr. A. Poupart, Mr. H. V. Taylor, Mr. Fred G. Treseder, Sir W. H. Lobjoit and Mr. A. N. Rawes, Secretary.

The only exhibit before this Committee was a new Tomato, called Bide's N.C.O., well-fruited plants of it being exhibited by Messrs. Bide and Sons, Ltd. It was recommended by the Committee for trial at Wisley.

Vegetables.

No Chelsea Show would be complete without a display of vegetables by the Hon. Vicary Gibbs, Aldenham House, Aldenham, and the magnificent collection by which he was represented on this occasion did much to emphasize the skill, both as an exhibitor and a grower, of his gardener, Mr. Edwin Beckett. Few vegetables and salads were not represented, and many uncommon subjects were included, such as the Morel (Morchella esculenta), the Red Currant Tomato, numerous ornamental Beans, Egg Fruits in several varieties, and Ornamental Peas. There were grand heads of Broccoli, Tomatos in many varieties; Cucumbers of perfect form; Rhubarb, Mushrooms, Potatos, French Beans, also in numerous varieties, Marrows, Peas, Turnips, Spinach, Broad Beans, Capsicums, Carrots, Lettuces, Oxalis tuberosum, Aubergines, Kohl Rabi—in fact, few vegetables or salads would appear to have been omitted from this marvellous display. This was the only exhibit of vegetables in the show.

Fruits.

Originality was the keynote of the display of Apples set up by Messrs. G. Bunyard, Ltd., the black cubes upon which the Apples were perched suggesting an attempt to produce a futuristic effect, a style of exhibiting not to be encouraged. However, the Apples themselves were in splendid condition and worthy of note, having been stored, according to a small notice, in a thatched, wooden fruit room, without ice or other artificial cooling. The varieties displayed, as stated, in excellent condition and beautifully coloured, were Blenheim Pippin, Cox's Orange Pippin, Upton Pyne, John Standish, Rosemary Russet, Orlean's Reinette, Wagener, Claygate Pearmain, Belle de Boskoop, William Crump, Edward VII, Reinette du Canada, Newton Wonder, Mornington Pearmain, Brownlees's Russet, Adam's Pearmain, Barnack Beauty, and several others, all excellent for so late in the season.

Strawberries were shown by Messrs. Laxton Bros., who had large mounds of fruiting plants of King George, Duchess of York, and The Duke, the two last-named appearing to be very heavy croppers; and appetising baskets of perfect fruits of, besides those mentioned above, Maréchal Foch, Laxton's Primate, and Acquisition—a splendid exhibit, portraying the very acme of Strawberry culture

Pot fruits, embracing Nectarines, such as John Rivers and Cardinal, of both of which there were several well-fruited specimens; Peaches, notably Duke of York, and a seedling (Kestrel Peach × Lord Napier Nectarine); and Citruses in variety, were exhibited by Messrs T. Rivers & Sons, the group also containing excellent specimens of several varieties of Plums and Cherries, among the latter, Guigne d'Annonay being specially worthy of note.

Messrs. Bide & Sons exhibited fruiting plants of their new Tomato, Bide's N.C.O., a strong growing, heavy cropping, red-fruited variety, carrying large trusses of well-shaped fruits of medium size.

Awards by the Council.

CHALLENGE CUPS.

The Sherwood Cup.—For the most meritorious exhibit in the Show.—To Messrs. Sutton and Sons, for greenhouse plants.

The Cain Cup.—For the best exhibit shown by an amateur.—To Lady Aberconway and the Hon. H. D. McLaren, for a mixed group of less common plants.

SILVER CUPS.

To Messrs. Dobbie and Co., Ltd., for Sweet Peas; to Messrs. Hodsons, Ltd., for a rock garden; to Sir Jeremiah Colman, Bart., for Orchids; to Messrs. Sanders, for Orchids; to Messrs. J. Cheal and Sons, Ltd. for a garden; to Messrs. W. H. Gaze and Sons, Ltd., for a garden; to Messrs. Frank Cant, for Roses; to Messrs. Chaplin Bros., Ltd., for Roses; to Messrs. L. R. Russell, Ltd., for stove and greenhouse plants; to Messrs. Blackmore and Langdon, for Begonias; to Messrs. James Douglas, for Auriculas; to Messrs. Blackmore and Langdon, for Delphiniums; to Messrs. A. Charlton and Sons, for trees and shrubs; to the Donard Nursery Co., for shrubs and conifers; and to Mr. G. Reuthe, for shrubs.

MEDALS.

Gold Medals.—To Messrs. Clarence Elliott, Ltd., for a rock garden; to Mr. Gavin Jones, for a rock garden; to Mr. G. G. Whitelegg, for a rock garden; to Messrs. R. Bolton and Son, for Sweet Peas; to Messrs. G. Bunyard and Co., Ltd., for Irises,; to Messrs. Barr and Sons, for Tulips; to the Hon. Vicary Gibbs, for vegetables; to Messrs. H. G. Alexander, Ltd., for Orchids; to Messrs. Charlesworth and Co., Ltd., for Orchids; to Messrs. J. and A. McBean, for Orchids; to Messrs. J. Carter and Co., for Sweet Peas and other florists' flowers; to Messrs. R. Wallace and Co., Ltd., for a mixed group of Lilies, Irises, Rhododendrons and hardy plants; to Lady Aberconway, and The Hon. H. D. McLaren, for mixed group of less common plants; to Messrs. Engelmann, Ltd., for Carnations; to Messrs. Allwood Bros., for Carnations and Pinks; to Messrs. R. Wallace and Co., Ltd., for a garden; to Messrs. Sutton and Sons, for greenhouse plants; to Messrs. R. and G. Cuthbert, Ltd., for Azaleas and other shrubs; to Messrs. Hillier and Sons for Cherries, Crabs and shrubs; to Messrs. G. Jackman and Son, for Clematis; to Messrs. R. C. Notcutt, for Lilacs, Brooms and other shrubs; to Mrs. A. Sherman Hoyt, for an exhibit of Californian Desert Plants and a Californian Redwood Forest scene.

Silver-Gilt Hogg Medal.—To Messrs. Laxton Bros., for Strawberries.

Silver Hogg Medals.—To Messrs. G. Bunyard and Co., Ltd., for Apples; to Messrs. T. Rivers and Son, Ltd., for fruit trees in pots.

Silver Knightian Medal.—To Messrs. S. Bide and Sons, for Tomatos.

Silver-Gilt Flora Medals.—To Messrs. Pulham and Son, for a rock garden; to Messrs. Tuckers, Ltd., for a rock garden; to Messrs. R. and G. Cuthbert, Ltd., for Azaleas; to Mr. W. C. Slocock, for Rhododendrons; to Messrs. John Waterer, Sons and Crisp, Ltd., for Rhododendrons; to Messrs. Black and Flory, for Orchids; to Messrs. Cowan and Co., for Orchids; to Messrs. Stuart Low and Co., for Orchids; to Messrs. Gasburn and Welch, for plants and dwarf shrubs for the rock garden; to Messrs. A. and W. Perry, for a mixed group of herbaceous plants, Irises, and Lilies, etc.; to Messrs. Ben R. Cant and Sons, Ltd., for Roses; to Messrs. Alex. Dickson and Sons, Ltd., for Roses; to Messrs. En-Tout-Cas Co., Ltd., for garden; to Messrs. M. Prichard and Sons, for herbaceous plants; to Messrs. John Waterer, Sons and Crisp, Ltd., for herbaceous plants; to Messrs. W. Fromow and Sons, for Japanese Maples; to Messrs. L. R. Russell, Ltd., for trees, shrubs and climbers; to Messrs. W. Watson and Sons, Ltd., for Brooms; to the Yokohama Nursery Co., for Japanese dwarf trees and Kurume Azaleas.

Silver Flora Medals.—To Mr. W. E. T. Ingwerson, for a rock garden; to Mr. F. Street, for Rhododendrons; to the Orpington Nurseries Co., Ltd., for Irises; to Messrs. Mansell and Hatcher, for Orchids; to Messrs. Clarence Elliott, Ltd., for rock garden plants; to Mr. C. Kirch, for alpine plants; to Messrs. W. H. Rogers and Son, Ltd., for rock garden plants and dwarf shrubs; to Messrs. John Waterer, Sons and Crisp, Ltd., for rock garden plants and dwarf shrubs; to Messrs. W. Cutbush and Son, Ltd., for Roses; to Messrs. W. Easlea and Sons, for Roses; to Mr. W. Yandell, for Violas; to Messrs. Bakers, Ltd., for Astilbes; to Messrs. Carter Page and Co., Ltd., for Dahlias; to Messrs. Wilson and Agar, for hardy perennials; to Mr. T. Robinson, for Dahlias and Ageratum; to Messrs. R. Green, Ltd., for Bay trees; to Messrs. Harrods, Ltd., for clipped Box and Bay trees; to Mr. John Klinkert, for topiary

Silver-Gilt Banksian Medals.—To Mr. H. F Fletcher, for Tulips; to Mr. G. G. Whitelegg, for Azaleas; to Messrs. R. Gill and Son, for

Rhododendrons and shrubs; to Messrs. Alex. Dickson and Sons, Ltd., for Sweet Peas; to Messrs. Armstrong and Brown, for Orchids; to J. J. Joicey, Esq. (gr. Mr. J. Mackay), for Orchids (This exhibit also won the Cup offered for award for the best exhibit of Orchids shown by an amateur in a space not exceeding sixty square feet); to Col. W. Kemmis (gr. Mr. J. W. Chapman), for Primulas; to Mr. Gavin Jones, for rock garden plants; to Mr. W. Wells, jun., for rock garden plants; to Messrs. Bees, Ltd., for shrubs, herbaceous and rock garden plants; to Messrs. B. Ladhams, Ltd., for alpine and herbaceous plants; to Mr. G. Reuthe, for rock garden plants; to Messrs. Lowe and Gibson, for a group of border Carnations; to Messrs. W. Cutbush and Son, Ltd., for a garden; to Mr. Ernest Dixon, for a garden; to Messrs. W. Wood and Son, Ltd., for a garden; to Mr. Elisha J. Hicks, for Roses; to Messrs. E. Webb and Sons, Ltd., for a mixed group of Cinerarias, Schizanthus, Primulas and annuals; to Messrs. Dobbie and Co., Ltd., for Calceolarias; to Messrs. H. J. Jones, for Hydrangeas; to Messrs. A. and W. Perry, for ferns; to Mr. G. H. Dalrymple, for Lupins; to Messrs. Hewitt and Co., Ltd., for Delphiniums; to Messrs. Bakers, Ltd., for Delphiniums, Trollius and other herbaceous plants; to Messrs. M. Prichard and Sons, for herbaceous plants; to Messrs. G. Bunyard and Co., Ltd., for Paeonies; to Messrs. M. Prichard and Sons, for rock garden plants. ; to Messrs. J. Cheal and Sons, Ltd., for trees and shrubs; to Messrs. W. Cutbush and Son, Ltd., for clipped trees and Hydrangeas; to Messrs. Fletcher, Bros., Ltd., for hardy trees, shrubs and conifers; to Mr. W. J. Marchant, for trees and shrubs; to Messrs. R. Veitch and Son, for shrubs; to Messrs. John Waterer Sons and Crisp, Ltd., for trees and shrubs.

Silver Banksian Medals.—To Rev. H. Rollo Meyer, for Tulips; to Mr. W. C. Slocock, for Rhododendrons; to Mr. J. Stevenson, for Sweet Peas; to Mr. G. H. Dalrymple, for Primulas; to Messrs. Bakers, Ltd., for rock garden plants; to Messrs. Clarence Elliott, Ltd., for trough gardens; to Messrs. H. Langridge and Co., for rock garden plants; to Messrs. Maxwell and Beale, for Primulas and rock garden plants; to Messrs. W. Wood and Son, Ltd., for rock garden plants; to Messrs. Barr and Sons, for a mixed group of Irises, herbaceous and rock garden plants; to Messrs. John Peed and Son, for stove and greenhouse plants; to Mr. H. P. Russell, for Calceolarias; to Mr. H. Clarke, for Violas; to Messrs. Hewitt and Co., Ltd., for shrubs; to the Hollambys Nurseries, for trees and shrubs.

Flora Medals.—To Mr. Ernest Dickson, for a rock garden; to Messrs. H. and W. Evans, for a rock garden; to the Orpington Nurseries Co., Ltd., for a rock garden; to Messrs. R. H. Bath, Ltd., for Tulips; to E. R. Ashton, Esq. (gr. Mr. C. V. Kent), for Orchids; to Mr. S. J. Goodliffe, for a mixed group of shrubs, herbaceous and rock garden plants; to Messrs. Stuart Low and Co., for Carnations; to the Garden Services, for a garden; to Messrs. Stuart Low and Co., for Hippeastrums, Australian shrubs and other greenhouse plants; to Studley College, for Campanula calycanthema; to Messrs. E. F. Fairbairn and Sons, for Dahlias; to Messrs. Kelway and Sons, for hardy plants; to Mr. Charles Turner, for shrubs.

Banksian Medals.—To Mr. T. M. Endean, for Cacti; to Mr. H. Dixon, for Orchids; to Messrs. Daniels Bros., Ltd., for mixed group of Aquilegias, Irises, Anemones and Tulips; to Mr. G. W. Miller, for hardy plants; to Mr. C. H. Herbert, for Pinks; to Mr. James MacDonald, for grasses; to Messrs. Reamsbottom and Co., for Anemones; to Messrs. W. Wood and Son, Ltd., for herbaceous plants; to Messrs. D. Stewart and Son, for trees and shrubs; and to the Marsden Hardy Plant Nurseries, for Shrubs.

⁂ *Our remarks on the Trees and Shrubs, Roses, Hydrangeas, Formal Gardens, Educational exhibits and Horticultural Sundries, etc., will be published in our next issue.*

HOME CORRESPONDENCE.

Glossiness in Flowers.—In your issue of April 27 (p. 314), Mr. T. Wilson very kindly takes up my recent challenge (*Gard. Chron.*, March 23, p. 220), namely, to bring forward a flower with petals as glossy as those of the yellow Buttercup. He names the scarlet Oriental Poppy as a possible rival, and asks me to judge. These Poppies are not yet in bloom, so a definite pronouncement must, for the present, be withheld; but I should like to point out to anyone challenging the supremacy of the Buttercup in this respect, that in making the comparison the petal in question should be held up to the light alongside that of one of the glossy, yellow Buttercups. The lustre then, I fancy, of such a petal as that of the Oriental Poppy will appear comparatively dull, although satiny, beside the mirror-like sheen of the Buttercup. Further, it must be borne in mind that the gloss of the Buttercup petal is confined to the exposed part of the petal, *i.e.*, the distal part of the upper (ventral) surface; and is, moreover, sharply marked off from the dull basal portion. When shininess occurs in other flowers it is usually most evident at the base of the petal, gradually becoming less so distally. The nearest approach—and only a feeble one— to the Buttercup petal that I have as yet come across, is that of Saxifraga Cymbalaria. The upper part of this yellow petal is somewhat glossy and gives, with iodine, a slight starch reaction. *J. Parkin.*

FRUIT GARDEN.

NOTE ON THE APPLE BLOSSOM WEEVIL.

In spite of the cold weather during February, the Apple Blossom weevil (Anthonomus pomorum, (L.) Curt.) appears to be more common than usual this spring in many Kentish orchards. It is evident, therefore, that severe weather does not destroy this troublesome insect.

A few adult weevils were found in the Apple plantations as long ago as the first week in March. On March 9, hundreds of weevils were noticed sitting on the tops of the spiles of a Chestnut fence which surrounds an Apple orchard. This date would appear to mark the beginning of the general migration period, during which the weevils leave their winter quarters, and find their way to the Apple trees.

From the second week of March onwards the weevils have been wandering about amongst the branches of the trees, seeking shelter under loose bark and in the cracks during cold, frosty weather.

During April the weevils were more active, and pairing took place upon the trees, mainly on warm, sunny days.

Some interesting observations concerning the habits of the Apple Blossom weevil during the time elapsing between the general spring migration, and the egg-laying period of the weevil (which commences when the blossoms have reached the " cluster cup " or " pre-pink stage ") have been made.

In an average season the weevil feeds to some small extent upon the developing leaflets prior to the egg-laying season. This season, however, the weevil has been observed feeding on the leaves to a very considerable extent during the past five weeks. This may be accounted for by the fact that the egg-laying period has been delayed owing to the later blossoming of the trees.

The weevil feeds upon both surfaces of the leaves. A portion of epidermis of the leaf is removed in the first instance, and finally a small hole is bored right through the leaf. These small holes in the leaves caused by the weevils, are to be found very commonly in most plantations, and many growers consider they are the result of caterpillar attack, which, however, is not the case in a good many instances. This season the weevils have been found to feed mainly during the night, and to some extent during the late evening. Very few have been seen feeding during the day time.

Observations show that the weevils fly readily during the night, and isolated specimens have been attracted to the light of a small electric lamp.

Some varieties of Pears, mainly Conference, have been attacked by the Apple Blossom weevil this year, and " capped blossoms " are only too common in many Pear plantations in the Maidstone district.

The Apple Blossom weevil is difficult to control, since wet sprays, soil insecticides and poultry do not check it to any extent. However, large numbers of weevils may be caught in sack bands, placed around the trees in such a manner as to allow the weevils to crawl into the sacking. On standard trees the sacking should be placed from two to three feet from soil level. Where bush trees are concerned, the sacking should be tied around the trunk as near to the branches as possible.

It is important to remember that the sack bands should be in position by the first week of June, and be left unattended until November or December, when the sacking should be removed carefully and burned, or boiled if required for use again. *A. M. Massee, East Malling Research Station.*

SOCIETIES.

ROYAL GARDENERS' ORPHAN FUND.

The Annual Festival Dinner of this exceedingly useful charity was held at the Savoy Hotel, Strand, on Wednesday, May 15, under the presidency of Samuel Wallrock, Esq. There was an unusually large attendance, and those present to support the Chairman included Mrs. S. Wallrock, Lord Monkswell, Sir E. Mountain, Sir Percy C. Simmons, Mr. and Mrs. Edward Sherwood, Mr. and Mrs. George Monro, Mr. and Mrs. W. Cuthbertson, Mr. Leonard Sutton, Mr. Noe, Sutton, Mr. and Mrs. J. Cull, Mr. and Mrs. D. Ingamells, Mr. and Mrs. J. F. McLeod, Mr. and Mrs. J. M. Bridgeford, Mr. and Mrs. Howard, Mr. Peter R. Barr, Mr. and Mrs. G. Barr, Mr. A. Dawkins, Mr. and Mrs. F. Secrett, Mr. and Mrs. Jolis, Mr. J. C. Allgrove, Mr. R. B. Leech, Mr. and Mrs. C. H. Curtis, Mr. T. Pateman, Mr. and Mrs. J. B. Linford, Mr. and Mrs. A. C. Harris, Mr. Rowe, Mr. Rayner, Mr. H. Cowley, Mr. and Mrs. G. F. Tinley, Mr. and Mrs. A. Ward, Mr. and Mrs. G. Woodstock, Mr. and Mrs. R. A. Witty, Mr. and Mrs. J. F. McLeod, Mr. H. Miles, Mr. and Mrs. A. Dimmock, Mr. and Mrs. Robins, Mr. and Mrs. Hannibal and Mr. A. W. Metcalfe.

At the commencement of the proceedings the Chairman read a telegram he proposed to send to H.M. the Queen at Windsor, as Patroness of the Fund, expressing thankfulness at the recovery of H.M. the King.

Later in the evening a reply was received from Her Majesty.

In proposing " The Royal Gardeners' Orphan Fund," the Chairman said that everyone present knew what happened to a plant if it was neglected in its early days, and if the same thing happened to a child, that child would die either from neglect or disease, or be severely handicapped. He asked those present to consider what their own childhood would have been without parents to care for them when they were helpless. The orphans of to-day were citizens of the future of this great Empire, and he hoped and believed some of them would be gardeners, but 5s. a week was only equal to 1s. or 1s. 6d. before the war—about enough to buy dog biscuits—and no one had any right to see a child in want. He instanced cases of orphans cared for by the Fund, but urged that gardeners should make an effort to look after the orphans of men of their own craft. He hoped that after that night the gardeners' motto would be not " Wake up, England," but " Wake up, Gardeners." Mr. Wallrock said he had departed from what he thought was the practice of former Chairmen, and he appointed stewards to collect. He knew things were bad and money was tight—but he had never known them otherwise—and on behalf of the little children he thanked those who had so ably assisted him, and coupled with the toast the name of Mr. Edward Sherwood, the Treasurer.

Mr. Sherwood, in replying, said that the first Festival Dinner was held in 1888, and during the war when the dinners could not be held, the Fund suffered accordingly. It had been his ambition to increase the allowance to 10s. a week. He was glad to say that a step in the right direction had been made, and the Easter allowance had been increased to 7s. 6d. He read extracts from letters from guardians of orphans expressing appreciation of this increase. He also referred to the economical management of the Fund, the cost being only between £300 and £400 a year. He thanked those owners of gardens who had thrown them open for the benefit of the Fund, and those who had collecting boxes. He expressed regret at the losses the Fund had sustained by the deaths of valued helpers—Lord Lambourne, Mr. H. J. Jones and Mr. C. Dixon.

Mr. G. Monro expressed his pleasure in being selected to propose the toast of "The Visitors." There was a time, he said—a dark and dreary time—when the two gardening Charities did not have ladies at their dinners. The Committee were fishermen who, having baited their hooks with a good dinner, hoped to catch the fish of their visitors' continued interest in the Fund. Referring by name to the distinguished visitors, Lord Monkswell, Sir Percy Simmons and Sir Edward Mountain, he suggested that Sir Percy Simmons, as a member of the Bridge Committee of the L.C.C., should see that the market people were easily able to get their produce across the river to Covent Garden.

In responding to this toast, Sir Edward Mountain said he was glad that when the Chairman had made the remark that money was tight he was not proposing the toast of the visitors. Although everyone could not tell the botanical names of Orchids, everyone could love the scent of a Rose. God gave us beautiful things, and he gave us gardens, and a man who loved his garden had the right spirit in him, but whatever men had done in their gardens, they were doing a better work by looking after the orphans of gardeners.

In proposing the toast of "The Chairman," Sir Percy Simmons said that he was a man of courage, as he had shown in the way he had approached his friends for support for the Fund. He referred in glowing terms to Mr. Wallrock's garden at Stanmore, and to his growing influence in the horticultural world. When rising to reply, the Chairman had a great reception; he said no man had any right to take on a job unless he intended to do it thoroughly; he had done his best, and he hoped when the Secretary read out the list, those present would not think he had done too badly.

The Secretary, Mr. A. C. Bartlett, then announced that donations received came to the fine sum of over £1,500, and he stated that the Chairman's heroic efforts to secure the financial success of the festival had been eminently successful.

The Chairman's personal list included his own donation of one hundred guineas; Mr. W. Cuthbertson, £100; Messrs. Sutton and Sons, £50; The Marquis of Winchester, £21; Lord Riddell, Sir Edward Mountain, Bt., Sir Percy C. Simmons, Lady Catto and Messrs. Barr and Sons, £10 10s. each; Mr. W. Wells, junr., £7 7s.; Messrs Pulham and Sons and Messrs. Barr and Sons, £6 6s. each; Mrs. W. Cuthbertson, Lord Dewar, Lord Bearsted and the Knight of Kerry, £5 each. The Chairman's Stewards' lists:—Mr. Edwin Beckett, £40, including £15 15s. from the Hon. Vicary Gibbs; Mr. J. C. Allgrove, £22 6s. 6d., including £5 5s. from himself; Mr. W. H. Holloway, £17 13s. 9d; Mr. W. H. Lees, £10, including £5 from himself; Mr. Harold Tucker, £9 1s. 6d. Total of Chairman's list, £832 1s. 9d.

General List:—Messrs. Hurst and Son, £52 10s.; Messrs. Rothschild and Sons, £26 5s.; the Royal Horticultural Society, £21; Mr. W. L. Bradbury, Mr. W. T. Paulin, Mr. Noel Berridge, and Messrs. Corry and Co. £10 10s. each; Messrs. Stewart and Co. £7 7s., and Mr. R. B. Leach and Mr. E. T. Willis, £6 6s.; Mrs. May Campbell, Mrs. Ethel Shepherd, Mr. W. E. Churcher, Mr. W. Marshall, Messrs. Nutting and Sons, Mr. W. F. Read, Mr. Alfred Dawkins, Mr. Charles Heidsieck, Messrs. Waterer, Sons and Crisp, Messrs. W. Cutbush and Sons, The Southport Flower Show Committee, The Horticultural Trades Association and *The Gardeners' Chronicle*, £5 5s. each, and from *The Gardeners' Chronicle* collecting box, £5 10s. 6d.; Mrs. Edwin Tate, Lord Leverhulme, Sir Otto Beit, Bt., Mr. Gerald W. E. Loder and Mr. W. Mitchell, £5 each.

The Fund's Stewards:—Mr. J. M. Bridgeford, £78 5s., including The Associated Seed Growers, Inc., U.S.A., $50; Messrs. J. Bodger and Sons, £5 5s.; Messrs. Watkins and Simpson, £5 5s.; Mr. Alfred Watkins, £5 5s.; Mr. J. M. Bridgeford, £5 5s.; and Mr. A. H. Howard, £5 5s. Mr. J. F. McLeod, £30, including £5 from Mr. D. B. Crane; Mr. J. E. Dixon, £25; Mr. F. Moon, £21, including £5 5s from Sir James Caird; Mr. A. W. Metcalfe, £13 13s; and Mr. A. Rayner, £12 12s.

Covent Garden List, per Mr. D. Ingamells.—Mr. George Monro, C.B.E., £21; Mr. F. A. Secrett, £21; Mr. J. Poupart, Mr. David Ingamells, Mr. Harry Miles, Mr. J. L. Kinnell, Mr. John Cull, Mr. M. Larsen, and Mr. A. C. Harris, £10 10s. each; Mr. H. F. Hannibal and Mr. Raymond Rochford, £7 7s. each; Mr. R. T. Bates, £6 6s.; Mr. John Firmin, Mr. A. Dimmock, Mr. Walter Turner, Messrs. W. T. Ware, Ltd., Mr. John Kirk, Mr. John B. Linford, Mr. R. A. Witty, Mr. A. H. Stevens, Mr. W. Maxwell, Mr. A. H. Maxwell, Mr. Frank Ladds, Mr. H. J. Edwards, Mr. Alfred Ward, Messrs. Charlesworth and Co., Mr. A. Robins, Mr. A. Staddon, Mr. H. O. Larsen, Mr. Frank Ridley and Mr. A. Bainbridge, £5 5s. each.

A capital programme was arranged by Mr. Ralph Norris; the tables were pleasingly decorated chiefly with Roselandia Roses and yellow Arums; the dinner was excellent, and the speeches short. The toast of the Secretary, Mr. A. C. Bartlett, given with musical honours and proposed by Mr. Nicholls, was followed by Auld Lang Syne and the National Anthem.

Obituary.

John Collins.—The death occurred on Sunday, May 5, of Mr. John Collins, who for forty-seven years was gardener to the late Sir Mark Oldroyd, at Hyrstlands, Dewsbury. Mr. Collins, who retired in July, 1927, was a highly respected man in the district, being a member of the old Dewsbury Borough Liberal Association, and a member of Batley Liberal Club.

Albert Harding.—On Saturday, May 4, Mr. Albert Harding, of Nab Lane, Mirfield, gardener to Mr. J. Barraclough, Bank House, passed away after an illness from which he had suffered a considerable time. He was a familiar figure in Mirfield where he was held in great respect.

ANSWERS TO CORRESPONDENTS.

CANTALOUPE MELONS.—*E. H. M.* Cantaloupe Melons may be grown in unheated frames without a hot-bed, and are then of superior flavour to imported fruits. Frame Melons cannot be produced in less than fifteen weeks from seed-sowing to the ripe fruit; now is a good time to commence, as the heat and light so essential to success are gradually on the increase. The compost most suitable is a loam of somewhat heavy nature with a little old lime-rubble or charcoal added; rich, light soil will enable the plants to fill a frame with rampant growth, but this growth will not finish the fruits. Sow the seeds in small pots or direct on the mounds of soil in the frames. Although Melons appreciate water and moisture when growing, they should be planted about two inches higher than the level of the surrounding compost. Two plants to a light are sufficient, and three breaks from each plant will be ample; when the shoots nearly touch the sides of the frame remove the growing points, as this will induce the laterals to produce flowers and fruits, and when about the size of Walnuts, six to eight fruits to a light, and of uniform size, should be selected for the crop, and the remainder removed. Stop the growths at the first joint beyond the fruit, and also those from which surplus Melons have been removed. By this means, and by constantly pinching the fresh laterals, the premier leaves will have plenty of room to develop and still allow sun and air to reach the surface of the bed. Raise the fruits on inverted pots; top-dress the roots with fresh compost and bone-meal; ventilate the frame carefully on bright days; syringe the plants early in the day when the frame is hot; and feed with warm liquid manure twice a week while the fruits are swelling. When the fruits have attained full size and are approaching ripeness, feeding must be discontinued, and clear water only given in diminished quantities, with less syringing and more air until the fruits are ripe.

NAMES OF PLANTS.—*A. E. W.* 1, Rhododendron Manglesii; 2, R. Halopianum, both hybrids of R. Aucklandii.—*H. W. H.* Symphytum tuberosum.

STOCKS SUFFERING FROM FOOT-ROT.—*A. B. H.* The Stocks are attacked by a species of Phytophthora, which causes foot-rot in many plants. The spread of the fungus in the seed-boxes may be prevented by watering the seedlings with Cheshunt Compound. It is unlikely that the same fungus is attacking the Brassica seedlings. They are probably infected with the damping-off fungus, due to Pythium debaryanum. Infection of cultivated plants may arise by the use of virgin soil in which Cruciferous plants were growing. Infected soil should be steam-sterilised (180°F. for three hours) before it is used for seed-sowing.

TULIP DISEASE.—*J. W.* Naphthalene would not be injurious to summer bedding stuff at the rate of two ounces to the square yard if dug in to a depth of six inches, so that the fumes would rise and kill the millipedes in the soil, including the snake millipedes which are often very destructive to the roots and tubers of many plants, especially the millipede named Blanjulus pulchellus. To get rid of the fungus, Botrytis Tulipae, it would be desirable to remove nine to twelve inches of the top soil of the bed, shovelling up all the loose soil loosened by the spade, in order to get rid of the sclerotia of the fungus that may be on pieces of decayed bulbs or even in the soil. The old soil should be buried where it would not be disturbed for some years. That could very well be done now, and two to three ounces to the square yard of naphthalene dug six inches into the soil in autumn, about a fortnight before planting the bulbs, so that fumes would be rising to protect the bulbs from millipedes. Old garden soils containing much humus, are liable to be infested with both the above enemies.

VINE LEAVES UNHEALTHY.—*T. B. S.* The leaves sent for examination were very thin and small for basal leaves, and were so dried up that it was impossible to diagnose the trouble accurately. Without more information in regard to the compost, construction of the border, and as to whether you grow any other plants in your vinery, it is impossible to arrive at a correct conclusion of the injury, It rather points to thrips, which may be introduced by other plants, or it may be any of the various diseases that vines are subject to. Pay careful attention to ventilation and atmospheric conditions, and dust the leaves with dry flowers of sulphur which cannot injure the vines and may easily improve their condition.

Communications Received.—A. W. T.—J. H. P.—G. H. W.—L. R. P.—G. H. L.—S. T. W—R. H. V

THE
Gardeners' Chronicle

No. 2214.—SATURDAY, JUNE 1, 1929.

CONTENTS.

Afforestation proposition, a novel ... 395
Alpine garden—
  Gypsophila repens var. monstrosa ... 402
Arnold Arboretum, wintry spring in the ... 396
Bluebell and Chestnut Sunday 395
Bulb garden—
  Narcissus Graellsii 401
  Puschkinias ... 401
  Scilla italica ... 402
Cereal symbiosis ... 395
Chiswick House estate 397
Cooper, Mr. C. H. ... 396
Fertilisers from the air 406
Flower garden—
  Oenotheras... ... 401
Forest development at Thetford 397
Gardeners' pay and status 407
Garden manures for June 406
"Hardy and Half-hardy Plants" 395
Hardy flower border—
  Doronicum Columnae and D. Pardalianches 401
Hightown Common ... 397
Hoyt, honour for Mrs. A. Sherman ... 395
Indoor plants—
  Calceolarias, herbaceous 400
  Streptosolen Jamesoni 400
Obituary—
  Dr. Trabut... ... 418
Paeonies, Harding Silver Cup for 395
Primula, the genus ... 402
Rock gardens at Chelsea 407
Royal Society's conversazione 397
Societies—
  Royal Caledonian Horticultural ... 412
  Royal Horticultural: Chelsea Show ... 408
  United Horticultural Benefit and Provident 413
Tree-felling competition 396
Trees and shrubs—
  Forsythia intermedia var. spectabilis ... 400
  Spiraeas, shrubby... 400
Tulips... 404
Tulips, May-flowering, at Kew 395
Vegetation of the Great Barrier Reef ... 396
Ward, Mr. F. Kingdon, illness of 395
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 405
Week's work, the ... 398

ILLUSTRATIONS.

Chelsea Show, exhibits at 401, 403, 408, 409, 411, 412
Cooper, Mr. C. H.... 396
Daphne tangutica 407
Miltonia T. B. Armstrong 397
Statice profusa var. superba 399
Ward's, Mr. F. Kingdon, tenth expedition in Asia, views of 405

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58·2°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, May 29, 10 a.m. (Greenwich time). Bar. 30.3. Temp. 52°. Weather Dull and cool.

Cereal Symbiosis.

IT is long since the even tenour of the way of botanical research has been so brusquely disturbed as it is by the pronouncement that our cereals provide the staff of life, not by their unaided efforts but by collaboration with certain fungi. This, in fact, is the assertion made by Messrs. Jodidi and Peklo.[*] The assertion is one which, in spite of its surprising nature, cannot be dismissed because of its lack of verisimilitude. The views put forward by the authors are, briefly, as follows:—The aleurone grain layer of cereals—a layer rich in proteins which occurs just beneath the husk of Wheat or other cereal grains—contains certain glutens which are peculiar to cereals and other grasses. They are not found in other plants. Gluten is a complex protein peculiar to cereals. It occurs in the aleurone grain layer and other parts of the endosperm of Wheat, etc., and one of its constituent proteins is known as "prolamin," which possesses the property, unusual in proteins, of dissolving readily in alcohol. It has, of course, been supposed, hitherto, that this aleurone grain layer which constitutes a store house of proteins, is produced, like other parts of the grain, by the unaided efforts of the Wheat plant. It has, however, been known for a long time that fungal hyphae occur in the tissues of certain grasses as, for example, English Rye Grass (Lolium perenne), with at least as much frequency as fleas in the coat of a dog, and it has often been suggested that fungi, of which these hyphae are parts, are always associated with this grass; are, in fact, symbiotic. It has even been suggested that, like the bacteria in the nodule of Leguminous plants, the symbiotic fungus of Rye Grass possesses the power of fixing nitrogen. Mr. Peklo, who has made a close study of these hyphae, has succeeded in isolating them from the grains of Rye Grass and in cultivating the fungus in the laboratory. From its detailed appearance Mr. Peklo comes to the conclusion that it is a member of the fungus family of Smuts, some of which live parasitically upon cereals and work much destruction. Similar fungi appear to exist also in the grains of Wheat and other cereals. The authors claim, indeed, to have seen the hyphae of these fungi penetrating the aleurone grain layer and suggest that it is the fungus and not the grass plant, which produces the aleurone grains. If this, indeed, be so, mankind will have to transfer its acknowledgment of indebtedness for its daily bread from the Wheat plant to the fungus, or rather, will have to divide his gratitude between the two partners of this symbiosis. In confirmation of their remarkable conclusions, Messrs. Jodidi and Peklo claim to have shown that the fungus isolated from the Rye Grass grain and grown in artificial media, actually makes the same protein—prolamin—as occurs in the gluten of the Wheat grain. This evidence seems well-nigh conclusive, but, needless to say, when facts so subversive of current ideas are put forward, even although they are apparently well attested, credence remains coy, preferring to await the independent confirmation of the strange news, rather than to accept unhesitatingly the new discovery. We may state, however, in the meantime, that the conclusions reached by Messrs. Jodidi and Peklo, if proved to be well-founded, will rank among the most important of recent years. Symbiosis which we knew already to be capable of so much, would then seem to be like Habakkuk, *capable de tout*, and Ceres will cease to be a goddess in her own right, and single, but mated with an hitherto unknown deity, Myxomycetes, and owing her power to that union!

Bluebell and Chestnut Sunday.—Sunday, May 26, was Bluebell Sunday at Kew and Chestnut Sunday at Bushey Park. Had also the Laburnums, Lilacs, Thorns or Wistarias a Sunday in their honour, a journey to Kew on the same day to see either of the families named would have been worth while, for each and all were a feast of colour. Between twenty-six and twenty-seven thousand people passed through the turnstiles at Kew, large numbers bringing lunch and tea baskets for a picnic in the grass or woodland. Although producing glorious sheets of colouring beneath the trees in the Queen's Cottage Grounds and elsewhere in the woods, the Bluebells at Kew are not so vigorous this year as usual. In common with most of the vegetation at Kew, they are feeling the effects of a shortage of rain.

May-flowering Tulips at Kew.—One of the numerous floral treats in store for visitors to Kew during the Chelsea Show was a display of May-flowering Tulips in the series of flower beds between the Palm House and pond. Somewhere in the neighbourhood of ten thousand bulbs, timed to flower at one time, gave a feast of colour of great beauty. Various spring flowers are planted as a groundwork for the bulbs, these including Wallflowers, Violas and Aubrietias. They, however, play but a small part in the effect as a whole, which is dominated by the brilliant, massed colours of the Tulips. The best of the Darwin Tulips include Clara Butt, delicate blush-rose; Loveliness, bright rose; Le Notre, rosy-pink; Psyche, delicate rose-pink; Madame Krelage, deep rose; Suzon, soft rose; and La Candeur (White Queen). Conspicuous among the May-flowering Cottage Tulips are Inglescombe Yellow; vitellina, primrose-yellow; Golden Bronze, Panorama, madder-red, tipped golden-bronze; Medea, carmine, shaded salmon; and St. James, reddish-mahogany. The four last-named are very effective Breeder Tulips for bedding.

Honour for Mrs. Sherman Hoyt.—The Council has awarded Mrs. Sherman Hoyt an Honorary Life Fellowship of the Royal Horticultural Society and, we understand, will award her special "Congratulations," in addition to the Gold Medal she received for her exhibit of Californian plants at Chelsea Show.

Harding Silver Cup for Paeonies.—The fourth of a series of cups presented by Mrs. Edward Harding is offered for award in 1929 for the best exhibit of three flowers of each of six varieties of Paeonies shown by an amateur. Banksian Medals in silver-gilt and silver are offered by the R.H.S. as second and third prizes. The competition will take place at the fortnightly show at the Society's new hall, in Greycoat Street, on June 25, and all exhibits must be ready for judging by 11 a.m. that day. Entries for the competition must be made on forms obtainable from the Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W.1, by whom the completed forms must be received not later than by the first post on Tuesday, June 18.

Captain F. Kingdon Ward.—We regret to announce that Captain F. Kingdon Ward, now in the Far East, is ill, at a place named Moung. Beyond the fact of his illness, no news has been received for several days. We trust that "no news is good news," and our readers will join us in sympathy with Mrs. Kingdon Ward, and in hopes for the speedy recovery of her intrepid husband.

A Novel Afforestation Proposition.—Mr. W. P. Templeton, a Parliamentary candidate in Banffshire, sets forward a rather novel proposal in the form of a scheme for planting trees on rough agricultural land. On farms there are three kinds of land—arable and pasture, and rough ground which is not good for cultivation or pasture. He believed it would be possible for the Government to grant some subsidy to the farmers for the purpose of planting trees on rough land—seventy-five per cent. of the cost of the trees—which would be the property of the tenant and the farm, and would be saleable to his successors according to growth. He had brought his suggestion before the Scottish Office, and he believed it would not be difficult to persuade whatever Government may be in power to see the benefit of such a scheme in the north-east of Scotland. He felt the proposal would be of more advantage than the big afforestation schemes, good as they are, and he intended to go fully into the matter. From enquiries he had learned that after a period of ten years the trees did not require anything like careful attention. The work could be done by the farmers at times when they were not engaged in other work. The result would be a national asset and an economic use of rough land.

"Hardy and Half-hardy Plants."—Under this title Mr. A. W. Darnell, Hampton Wick, Middlesex, has commenced the publication of a monthly magazine for amateur and professional gardeners. Judged by its first issue, this is a delightful production, and one that differs in style from the average horticultural weeklies. It is a kind of horticultural *Bot. Mag.*, but of demy quarto size, which enables the editor to display life-size reproductions of very many plants. The new work aims at giving illustrations and descriptions of beautiful and interesting plants suitable for outdoor culture in the British Isles. Each issue is to contain not fewer than twenty-one life-size reproductions, one being in colour. Lithography is the process used, and is applied to the letterpress as well as the illustrations. No similar work has been attempted. We heartily congratulate Mr. Darnell upon the success of his first issue, and trust that he will receive sufficient support to enable him to continue. All the reproductions are from his own brush and pen and contain a detailed accuracy that is very pleasing. Mr. Darnell is known to our readers, as many of his plant drawings have been reproduced in these pages, and he is responsible for the horticultural monograph of "The Genus Primula," now appearing. The only criticism we have to offer is that a summary of the history of each plant would add to the interest of *Hardy and Half-hardy Plants* and make it more valuable as a work of reference. The price is 2s. 6d. monthly, thus for 30s. a subscriber would in one year procure an album of first-rate illustrations of no fewer than 250 hardy and half-hardy garden plants.

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[*] "Symbiotic Fungi of Cereal Seeds and their Relation to Cereal Proteins," by S. L. Jodidi and Jaroslav Peklo. *Journ. of Agric. Research*, Vol. 38, No. 2. Washington, D.C. January 15, 1929.

Vegetation of the Great Barrier Reef.—Mr. G. Tandy, who, with Mr. F. S. Russell, conducted an expedition to Low Islands, gave a preliminary account, illustrated with lantern slides, of the vegetation of the Great Barrier Reef, at a recent meeting of the Linnean Society. He stated that Low Islands present a very interesting set of problems for the botanist. As one comes from the southward they are the first of the "low and wooded" islands of the early navigators to be encountered. The arrangement of a Mangrove swamp to windward (with Rhizophora mucronata the dominant) and a more or less vegetated cay of coral sand to leeward, is found in considerable numbers northwards from here. To understand the formation, the behaviour of the South-east trade wind (pretty constant here from April to November) must be considered. In early morning it will be at S.S.E. and light, but as the day goes on it will shift to E.S.E. or even E. and freshen. This means that the heaviest seas will commonly be on the north side of the Mangrove island. Here the drift of the coral shingle is driving the Mangrove back. On the lee side of the swamp, however, they are extending in a westerly direction. The Vice-President congratulated Messrs. Russell and Tandy on the results of their labours and on the very interesting story of the expedition. Dr. A. B. Rendle, expressed his congratulations on the successful results of the expedition, and as a botanist referred more particularly to the botanical results. He mentioned that, although the botanical department of the British Museum had to suffer the loss of Mr. Tandy's services, while he was absent with the expedition, the rich material he had brought back would be of great value in elucidating the symbiotic relations of life on a coral reef.

Legacies to Gardeners.—The late Mr. Jenneson Taylor, of Brookside, Sunderland, who died on March 24, left £100 to his gardener, Mr. A. Brown, if in his service at the time of his death.—The late Miss Clara Tilbury Tarner, of St. John's Lodge, Tilbury Place, Brighton, who died on February 1, left £100 to her head gardener, Mr. David Turner, and her late gardener, Mr. Robert Hillier, and £200 to her gardener, Mr. Charles Poughton.—The late Mrs. Alice Ann Dalton, of Park House, Catham Park, Bristol, who died on March 4, left £300 each to her gardeners, Mr. Robert H. Jennings and Mr. James H. Sayers.—The late Mr. Hugh Hathorn Nicholson, of Spital Hall, Spital, Cheshire, who died on February 7, left £100 to his gardener, Mr. George Hancock, if still in his service.

Nice Horticultural Exhibition.—A successful exhibition, organised by the local horticultural Society, took place at Nice from March 30 to April 3, and at the same place and time the tenth Congress of the French National Horticultural Federation was held, under the Presidency of M. Alfred Nomblot. The exhibition was excellently arranged by M. Giuglaris, head of the parks department at Nice, who is also the Secretary of the Society. The jury had for its president the Comte de Kerchove de Denterghem, Governor of East Flanders, and President of the Ghent Royal Botanical and Horticultural Society. The Premier Grand Prix d'Honneur, offered by the President of the Republic, was awarded to the firm of Flandria, at Bruges; and a second Premier Grand Prix, offered by the Prince of Monaco, was won by M. Dental, with the produce of his nurseries at Golf Juan. The Nice Municipality's special prize was awarded to Messrs. Vilmorin-Andrieux, of Paris, and that of the Council of the Alpes-Maritime to MM. Maiffret frères, Beaulieu-sur-Mer. The judges were amazed at the quality and variety of the exhibits, considering the unprecedented cold of the winter and spring, and were greatly interested in the many beautiful public and private gardens which were visited at the close of the exhibition and congress.

Mr. C. H. Cooper. — Recently appointed chief assistant to Mr. J. Roberts, the Superintendent of the Public Parks and Cemeteries at Chesterfield, Mr. C. H. Cooper is already well-known as a capable gardener and successful exhibitor. In his early years he served under Mr. Nash and Mr. Pearce at Badminton, and then passed on to the gardens at Clonna, Sydney, Gloucestershire. Two-and-a-half years later Mr. Cooper went to Bignell Park, and eventually gained experience at Maer Hall, Staffordshire and at Swinfen Hall, in the same county. Later, he became indoor foreman at Polesden Lacey, Surrey, and then general foreman at Blyth Hall, Nottingham, where a year later he became gardener and remained in that position until the death of his employer. Desiring to engage in public gardening, he obtained his present position at Chesterfield. While at Blyth Hall, Mr. Cooper proved a most successful cultivator and exhibitor of Chrysanthemums, fruits and vegetables, his successes including a sixteen-guinea challenge cup for Chrysanthemums, two silver cups won outright after winning them in three consecutive years, two gold medals, the George Bunyard Silver Medal, and forty-nine first, fourteen second, and eleven third prizes.

MR. C. H. COOPER.

Tree-felling Competition.—The Executive of the Northern Branch of the Royal Scottish Arboricultural Society, whose headquarters are in Inverness, is to be congratulated on the fine success that has attended its inauguration of a tree-felling competition—the first of its kind in the north—which took place at Dalcross, on the Earl of Moray's estate, some ten miles from Inverness, on Saturday, May 18. Superb weather prevailed, the material provided for the competitors was of the best, and intense interest was taken in the day's proceedings. Eighteen teams entered from eight counties, and great enthusiasm was evinced. A large gathering watched the proceedings, including Colonel Neil Fraser-Tytler of Aldourie, the President of the Branch. The conditions were that each team, consisting of two competitors, had to fell and trim two trees—a Larch and a Spruce—and marks were given them for setting in, cutting low, axemanship, throwing the tree between pegs set twelve feet apart, the cleanest break, freedom from injury to the timber, and for trimming and snedding. The competition proved a highly practical and successful demonstration in forestry work, and, as Colonel Fraser-Tytler said at the close, the competitors showed remarkable skill and aptitude in their work. Mrs. Rose, of Kilravock, presented the prizes to the winners as follows :—(1) £5, J. Lyons and J. Davison, Dumdreggan Sawmills, Invermoriston; (2) £3, Finlay MacKay and Alexander Finlayson, Brahan Estate, Conon Bridge; (3) £2, A. Grewar and R. Coutts, St. Clair, Dores. Messrs. Colin Moir and J. Tough, Strathconon, won the prize for the best-kept tools. Those well-known foresters, whose names are household words in forestry circles in the north, Messrs. Gilbert Brown, Feaks, R. Anderson and John Clark, were the judges, while Mr. Alexander Ross, Forres, judged the tools. The whole formed a capital display, and Major David Ross, Inverness, the Secretary of the Branch, deserves hearty congratulations upon the very complete arrangements he made for the contest.

Memorials to Sir William Schlich.—On Thursday, May 23, honour was done to the memory of the late Sir William Schlich, Inspector-General of Forests to the Government of India, and afterwards Professor of Forestry as Oxford University, when Dr. F. W. Pember, the Vice-Chancellor, unveiled a bronze portrait plaque memorial to him at the Oxford School of Forestry, an institution which Sir W. Schlich was instrumental in founding. A second memorial to him will also be established, the Forestry Commissioners having agreed to the proposal of the Memorial Fund Committee that the area of forest, to be named the Schlich Forest and situated, if possible, within easy reach of Oxford, be made available for experimental work. In this forest a group of Oak trees will be planted and maintained in Sir William's memory. Sir W. Schlich was one of the leading authorities on silviculture, and it was through his endeavours that a Chair of Forestry was inaugurated at Oxford University. His *Manual of Forestry* is well-known as a standard treatise.

Wintry Spring in the Arnold Arboretum.—The *Bulletin* of the Arnold Arboretum, dated April 27, states that "the atrocious weather of the past two weeks had a disastrous effect on plants that happened to be in full blossom. Plants may be very hardy, but it is not to be expected that their tender blossoms can withstand snow, sleet, hail, several degrees of frost, and high winds. Often as not the first flowers of spring suffer for their daring, but this year they have been punished most severely. When the first *Bulletin* went to press two weeks ago the group of Rhododendron dauricum mucronulatum on Bussey Hill was a wealth of rosy-purple, thousands of blossoms being fully open; the Star Magnolias in front of the Administration Building were sheeted in white, and the Manchurian Apricot was in full bloom. Before the *Bulletin* appeared in type every expanded blossom had been destroyed. Not before have the flowers of R. dauricum mucronulatum suffered so severely as this year; every open or partially open flower was absolutely ruined. The Magnolia blossoms were browned and resembled sodden, brown tissue paper, and the flowers of the Manchurian Apricot were killed. The Forsythias, whose blossoms are accustomed to a good deal of buffeting each spring, have suffered far more than is usual, and their lustre and beauty has gone from them, although late expanded buds are now doing their best to enliven the branches. Fortunately, only a few subjects had burst into bloom, otherwise the tale of woe would have been even sadder. The return to cold, boisterous and stormy weather has had a retarding influence on all vegetation. It has also greatly hindered spring work; much of the land in the Arboretum lies low, and this has been flooded, making it impossible to do any transplanting or even to cultivate the ground. The probability is that this stormy spell will be followed by hot weather, which means that the spring season will be unusually short. The unseemly weather has had the curious effect of advancing the blossoming period of some plants while retarding that of the majority. For example, on Bussey Hill a Pear tree (Pyrus ussuriensis) is in full blossom, preceding, instead of its usual practice of succeeding, the earliest flowering Cherry. In the Arboretum the first blossoms are just opening on the Sargent Cherry; at North Easton, which in spring is usually a week behind us, this Cherry is in full bloom and, so too, is it across the Parkway from the Arboretum. While the Cherry blossoms have remained virtually at a standstill during the past two weeks, the buds on the Lilac bushes have grown considerably, and there is great promise of a fine crop of flowers. After a careful survey it is comforting to note that although the first flowers of spring have had a rude awakening and suffered heavily for their haste, no material damage has been done to those which had not progressed beyond the bud stage. If from now on normally decent weather prevails, there will yet be a rich harvest of spring flowers."

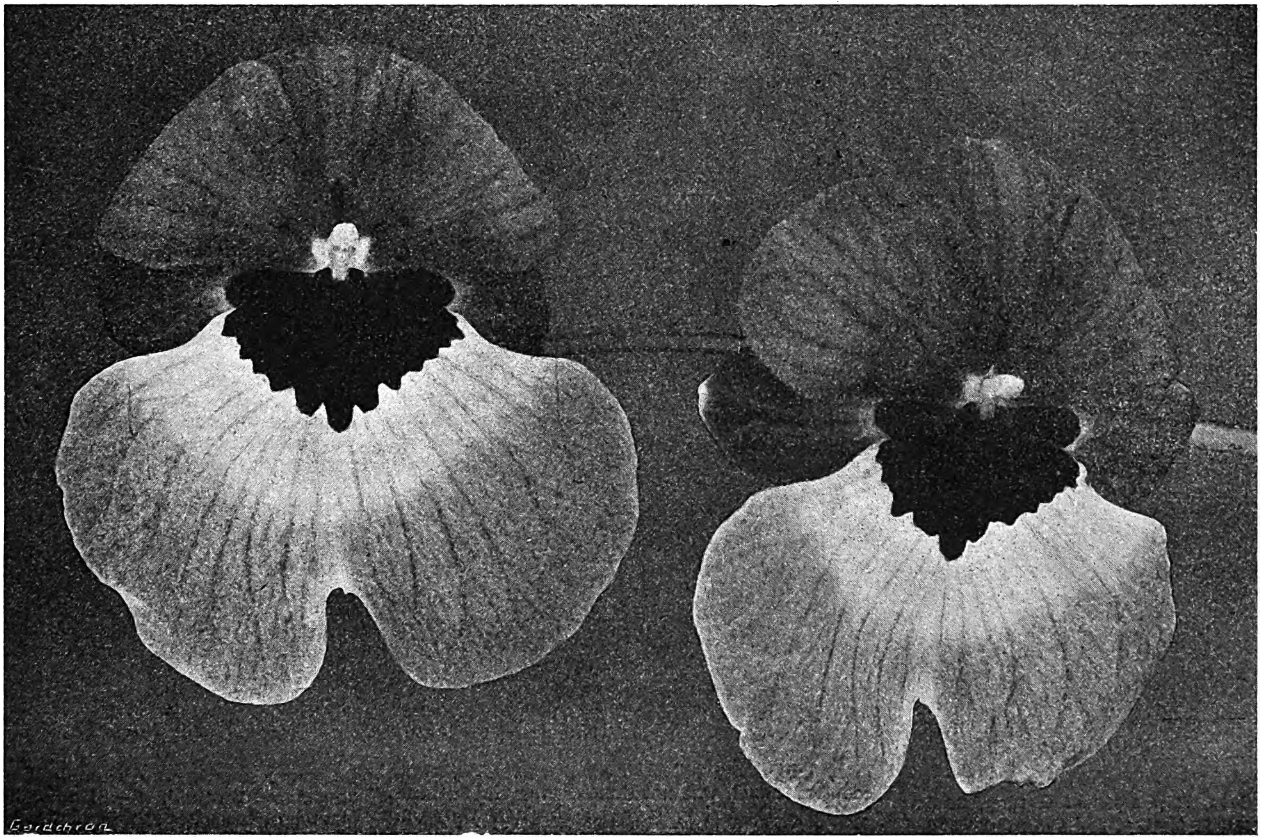

FIG. 200.—MILTONIA T. B. ARMSTRONG.

R.H.S. First Class Certificate, Chelsea Show, May 22. Flowers, red, rose, white and black. Shown by Messrs. Armstrong and Brown.

(see p. 383.)

Hightown Common.—We learn that Hightown Common, a beautiful tract of heathland some forty acres in extent, adjoining the New Forrest and situated near Ringwood, is to be acquired for the Nation and vested in the National Trust. It is proposed to erect on the land a memorial to the late Lord Eversley, who was instrumental in securing this lovely area for the public.

The Royal Society's Conversazione.—Exhibits of a highly scientific nature, and covering a wide field, were displayed at the conversazione held by the Royal Society at its headquarters at Burlington House, on May 15. There were two exhibits of interest to horticulturists. Miss D. M. Cayley, of the John Innes Horticultural Institute, had a series of specimens demonstrating the transmission, by bulb grafting, of the virus responsible for "breaking" in Tulips, while the Rothamsted Experimental Station staged an interesting exhibit of plants toxic to animals and fish; these included several tropical Leguminous plants, such as Derris and Tephrosia, extracts of the toxic principles being displayed in several instances. The exhibit also included English-grown Pyrethrum (Chrysanthemum cinerariaefolium), and the products yielded by it.

Chiswick House Estate.—On Thursday, July 4, Prince George will open the grounds of Chiswick House, some sixty-six acres in extent, to the public. The grounds, together with the historic house, were purchased from the Duke of Devonshire by public subscription, and are now under the care of the Brentford and Chiswick Urban District Council. We were privileged to see the grounds during the present week, when the Wistarias on the walls and along the front of the famous Camellia house were wonderfully beautiful, while Rhododendrons, Horse Chestnuts, Hawthorns and Lilacs added their quota of beauty and fragrance to this fine old-world garden, where the trees in general and the Lime Avenue and the Cedars in particular, are particularly good.

Forest Development at Thetford.—What will, it is stated, be the largest forest in England, is rapidly materialising in the vicinity of Thetford under the auspices of the Forestry Commission. Some 15,999 acres of what was once barren, waste land have already been planted with Pines, Larches and Fir trees, and it is estimated that the forest, when completed, will stretch for sixteen miles over Norfolk and Suffolk, and will provide some of the best timber in the country, the land being specially suitable for the growing of Coniferous trees.

Appointments for the Ensuing Week.—Monday, June 3: Harrogate and District Horticultural Association's meeting. Tuesday, June 4: Royal Caledonian Horticultural Society's meeting; Three Counties Agricultural Show at Gloucester (three days). Wednesday, June 5: National Carnation and Picotee Society's meeting; Rotherham and District Horticultural and Chrysanthemum Society's meeting; Gainsborough Allotment Holders' Association's meeting. Thursday, June 6: Iris Society's Show (two days); Bideford and District Horticultural Society's meeting. Friday, June 7: Manchester and North of England Orchid Society's Annual Meeting. Saturday, June 8: Derbyshire Horticultural Association's meeting; Leeds Paxton Society's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Emigration.*—We are not anxious to give advice to emigrants, although continually solicited to do so. A man's temperament, means, habits and peculiarities exercise so great an influence upon his destiny, that it requires a considerable acquaintance with him for even the most sagacious friend to know where in the wide world he is more likely to be successful than at home. It will, therefore, be easily understood why we shrink from the responsibility of saying that which may determine, whether for good or for evil, the future destiny of any correspondent. Nor is it easy to know what value to attach to the reports which reach Europe concerning distant colonies. That statements are very often over-coloured—unintentionally, perhaps—is certain. Nor can it well be otherwise; for if it is natural for a man to eulogise the country in which he has created his fortune, it is equally his interest to say whatever will attract thither the population which will increase the value of his property. And, on the other hand, he who fails assigns his want of success to anything rather than his own unskilfulness, imprudence, or lethargy. The one exaggerates what is good, and overlooks the reverse; the other exaggerates what is evil and forgets the unquestionable good. *Gard. Chron., June* 3, 1854.

Publication Received.—*Lawns*, by F. F. Rockwell, illustrated, pp. 87; The Home Garden Handbooks Series, The Macmillan Company, New York, price 4s. 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Coelogynes.—Many species of this genus which require warm growing conditions, such as C. Dayana, C. Lawrenceana, C. Sanderiana, C. pandurata and others, are now producing flower scapes simultaneously with the new growths, and will require an increased supply of water at the roots each time the compost appears dry, to prevent the pseudo-bulbs shrivelling. Those that have pendent flower spikes—C. Dayana and C. Massangeana—should be grown suspended from the roof, so that their flowers may be seen to the best advantage. A moist and buoyant atmosphere should be maintained and shade provided from strong sunshine, every encouragement being given to assist the development of good flowers. The plants should not remain dry at the roots for long periods, and the flowers will remain in perfect condition for a long time if, when they commence to expand, the plants are given cooler and drier quarters. When flowering is finished, any necessary repotting may be done, using well-drained receptacles and a compost of three parts Osmunda fibre and one part Sphagnum-moss, with a little fibrous loam for the strong rooting kinds, adding crushed crocks to keep it porous. Some of the scandant growers, like C. Meyeriana, are best grown on a block or a Teak-wood raft. Careful watering is necessary until the roots are well established; the surroundings should be kept moist, but moisture should not be allowed to collect in the new growths or decay will set in. Coelogyne cristata and its varieties, that have passed out of flower and are growing freely, should receive attention at the roots. Unless the plants are deteriorating or are overgrown, top-dressing will be sufficient, just removing all decayed bulbs and sour compost, and then working in the fresh compost around the roots; secure any loose leads in position with wire pegs, and syringe the plants occasionally in suitable weather. These Orchids will thrive in an intermediate temperature, allowing more light and air as the pseudo-bulbs develop.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Chief Assistant Lecturer, Reading University Horticultural College.

Peaches and Nectarines.—These have set a plentiful crop of fruits, and a good season is anticipated. Very few curled or blistered leaves have been noticed, although the nights during April, while the trees were in blossom, were very cold. It will now be safe to remove protective material from the trees and to remove at intervals, or stop, superfluous shoots. All the badly placed and small fruits should also be removed, three or four of the best placed being retained on each branch. Finally, these should be reduced to one when the trees have passed through the stoning period. When reducing these fruits, and when feeding, the vigour of each tree must have due consideration. Those that are inclined to make gross growths should be allowed to carry more fruits than weakly ones; and food, which should be withheld from the strong, should be judiciously applied to those that are not so vigorous. Give the trees and borders a thorough drenching with water, with a hose, to promote clean, healthy growth, and assist in keeping red spider in check. Afford frequent applications of liquid horse- or cow-manure, and apply a mulching of half-decayed manure, to keep the soil moist and cool, to the outward stretch of the roots. The applications of liquid manure may be continued until the fruits show indications of ripening, after which clear water only should be given.

Protecting Fruits from Birds.—Preparations should now be made to protect the Strawberry crop with netting against birds. Do not wait for the fruits to show colour, but place the nets in position at once. The most convenient method of protecting these fruits is to have a boundary of wire-netting, one-inch mesh, supported by strong six-feet stakes, driven well into the ground, and from the tops of these, strands of single wire stretched from side to side and from top to bottom, forming a rough meshwork to support the ordinary fish-netting. This method requires less netting, makes the crop more secure from birds and vermin, and enables the gathering of the crop to be accomplished more easily. Mice are sometimes very troublesome, especially in gardens where the walks are edged with Box. The earliest opportunity should be taken to poison these pests before the fruits commence to ripen, for after that, poison in any form should not be used. If, however, they continue to give trouble, recourse should be had to the "break-back" type of trap.

Raspberries.—The same protective measures must be taken for these fruits as for Strawberries, but there is no need yet to have the nets placed in position. Water is very necessary for both crops, but particularly so for the Raspberry. The season continues to be very dry and the soil is lacking moisture to a great degree. Every endeavour should be made to give this crop one or two good soakings of clear water, to be followed by applications of well diluted liquid manure. Where there is a surplus of suckers between the rows, these should be thinned, by pulling them out rather than by cutting them off at the soil level. Lawn-mowings spread, not too thickly, on both sides of the rows will help to conserve moisture and prevent the germination of annual weeds.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Summer Bedding.—All plants for summer bedding should be thoroughly hardened off preparatory to being planted in their flowering quarters. Many plants receive a severe check at this stage as a result of sudden exposure to outside conditions; therefore, see that all are hardened off gradually, even if, as a result, planting has to be delayed a few days. Where beds have been filled with spring-flowering plants, these should be cleared and dug so soon as the occupants are past their best. It is advisable to enrich the soil by applying well-decayed manure or decomposed vegetable matter, if such was not done during the autumn. If the soil is dry, give the beds a thorough soaking of water a day or two before planting. By this date it will be safe to plant the majority of bedding plants in their flowering quarters; but, with the more tender kinds, such as Begonias, Heliotrope, Petunias and Salvias, it is advisable to defer planting for a week or so in some districts, in case ground frosts occur. So far as practicable, take advantage of dull, showery weather for planting subjects from boxes or frames; those grown in pots may be transplanted without undue disturbance of their roots at any time; if dry at the roots, give a good watering. Plant them firmly, and when the soil is moderately dry, hoe the beds to create a loose surface, which will act as a mulch and prevent evaporation of moisture. Continual watering is not to be recommended, but during hot, dry weather a light spraying overhead during the evening will be beneficial and assist the plants to become established. Where large beds have to be furnished, Pentstemons and Antirrhinums give satisfactory results. Of the former, the varieties known as Castle Forbes and Lady Mary Hope are among the best of the scarlet sorts; both are good growers and very free-flowering, especially the former. Day Dream is probably the best pink Pentstemon for the purpose. These require liberal treatment in the way of manure and close attention to watering; if dry conditions prevail for any length of time it will be found beneficial to apply a mulch of well-decayed manure over the surface of the bed. For large borders or beds on sloping banks, the tall forms of Antirrhinums are effective; for the medium or small-sized beds, the intermediate sorts are most useful, while for carpeting Rose beds, the dwarf section is admirable. Where intermediate Antirrhinums are used, it is a good plan, especially if the bed is of large dimensions, to employ Gladioli of a different colour as dot plants; these, if started in five-inch pots as previously advised, will be in good condition for planting by early June. Large beds of Pentstemons are also better if interplanted with Gladioli, provided they are of suitable colour shades.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Early Vines.—The cold nights and sudden bursts of hot sunshine during the day make it extremely difficult to maintain steady conditions. Early Grapes will now be colouring and possibly causing some anxiety as to "finishing"; some relief may be obtained from careful surface feeding, together with a slightly lower temperature, with a little extra air at night. As the Grapes approach ripeness they will require cooler conditions with liberal ventilation and less moisture, but, with the whole of the summer yet to come, the floors and walls must still be well damped and syringed once or twice a day when the weather is favourable, to admit of a free circulation of fresh air. Red spider, too, often puts in an unwelcome appearance at this stage, and demands immediate attention; if solitary leaves are attacked they may be sponged at once with soapy water, as sulphur cannot be employed conveniently at this stage. The midseason varieties in succession houses are now swelling their fruits freely and should receive liberal supplies of warm, diluted liquid manure applied to the inside borders and sprinkled over the paths and surface of the beds so soon as the sun leaves the roof on fine evenings. Night air should be given about 8 p.m., and shut off early next morning, when damping will precede airing for the day; the maximum day temperature of 80° to 85° should always be approached gradually by slight additions of air while the temperature is on the rise, and, similarly, reducing must be carefully followed on converse lines. As Grapes swell most when early afternoon closing is practised, the house should be closed in time for the temperature to reach 90°, with plenty of atmospheric moisture. As a little steady artificial heat is necessary, fires should be started in time to let the temperature fall gradually to 70° at 9 p.m., and to 65° the following morning. Although thinning may be considered finished, it will be well to look over large bunches after stoning is finished, especially of Gros Colmar, which is very deceptive. Pinch back the strongest laterals and regulate the foliage to maintain a free circulation of air between it and the glass; weak lateral growths need not be finished very close. Muscats in early houses will have been finally thinned and should have similar treatment in every way save one, and that is the degree of heat. The temperature may range 5° higher than would be good for Black Hamburgh, although Gros Colmar will withstand and enjoy it. Late Muscats, which are this year later than usual, will now be in flower. Do not be in a hurry to tie the flower trusses down close to the wires, as large bunches often set better with their points up towards the glass. See that the roots are kept in an active condition in warm, moist borders, with brisk heat and plenty of fresh air.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Hippeastrums.—Seed-pods on the earliest plants of Hippeastrums will, in all probability, be ripe, and should be gathered and the seeds sown without delay, for fresh seeds germinate readily in a warm house. The seed receptacles should be clean and well-drained, and the compost should be of an open nature; distribute the seeds thinly and evenly over the surface of the soil, which should have been well watered previously and allowed to drain, and cover the seeds chiefly with clean, sharp sand. After sowing, place the receptacles in a warm house, cover them with a sheet of glass, and shade from bright sunshine until germination takes place. Young plants sown last year should be potted on as they require increased root space; they should be transferred to the larger receptacles with as little disturbance of the roots as possible. After potting, grow them in a light house and in a temperature similar to that in which they were growing previously. The house should be closed and the atmosphere made moist so early as the outside conditions will allow, so as to keep them in active growth. Old plants that have flowered this season should be kept growing freely and the roots liberally supplied with liquid manure. As growth approaches maturity, the plants should receive more air, and so soon as they show signs of requiring rest, water should be withheld gradually and the plants exposed fully to the sun to ensure well-ripened growths.

Chrysanthemums.—Chrysanthemum plants that are being grown to produce large exhibition blooms will now be ready to be placed in the pots in which they are to flower, but before proceeding with this operation they should have been hardened sufficiently to withstand cold winds, otherwise, when the plants are arranged in rows, some of the lower foliage may be lost. The receptacles may be from eight inches to ten inches in diameter; the larger size being more suitable for strong-growing varieties. The receptacles should be clean and well-drained, Cover the crocks with turf from which most of the fine soil has been shaken, for it is essential that the drainage should be as perfect as possible for Chrysanthemums. The compost should consist chiefly of good, strong loam, adding leaf-mould, manure from an old, spent Mushroom bed, and to each barrow-load of soil one four-inch potfull of bone-meal, the same amount of soot, and a little Chrysanthemum fertiliser; some grit or burnt ashes from the garden bonfire will tend to keep the compost open. The compost is best prepared and the ingredients thoroughly incorporated several days before it is used. Firm potting is necessary to ensure good, short-jointed growths which are essential to produce the best results, therefore the compost must be in suitable condition for it to be made firm. Should the soil be on the wet side, rather delay the operation for a day or so than attempt to ram soil that is on the wet side. The shoots should be tied to stakes secured to wire. Careful watering is necessary at this stage, and provided the young plants receive a full supply before potting, they will, in all probability, not require any more for two or three days, when they may be watered in with a fine-rosed can; spraying the plants several times daily is to be recommended, especially if the weather is hot and dry. Although careful watering is recommended, the plants must never suffer through drought. Green and black aphis are sometimes troublesome, but these pests are easily kept in check by spraying with a nicotine wash, but see that the spray reaches the crown of the plant for it is here that the aphis attacks and harms the young leaves.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Asparagus.—Strong growths will now be pushing up. Keep the beds clear of weeds and encourage weak plants by applying a quick-acting fertiliser. Soot is a useful Asparagus stimulant. Beds that were planted during the spring should now receive a light mulch of half-decayed horse manure. The Asparagus seedlings may be thinned before overcrowding takes place, while the surface soil should be stirred with a Dutch hoe and, should dryness at the roots be apparent, water the seedlings well.

Peas.—A further sowing of late Peas should be made—the variety The Gladstone being suitable. Earlier-sown Peas are now growing fast since the change in the weather, and supports should be given, the height of the stakes depending, of course, on the height of the variety; in any case, stakes a few inches higher than the approximate height of the individual variety should be employed.

Marrows.—These may now be planted. If hand-lights are available, these should be placed over the plants for a week or two until they get a hold of their new soil, when the hand-lights may be removed. Keep a few plants in reserve under cover in case late frosts injure those planted out.

Maize.—If the Maize plants, which were raised under glass, have been thoroughly hardened off, they should now be planted out in ground that has received a good dressing of farmyard manure. Allow three feet between the lines and eighteen inches between the plants. Maize delights in warmth, therefore a sunny position should be selected, and the plants should be well supplied with moisture at the roots in the growing season. As growth advances, secure each plant firmly to a stout stake.

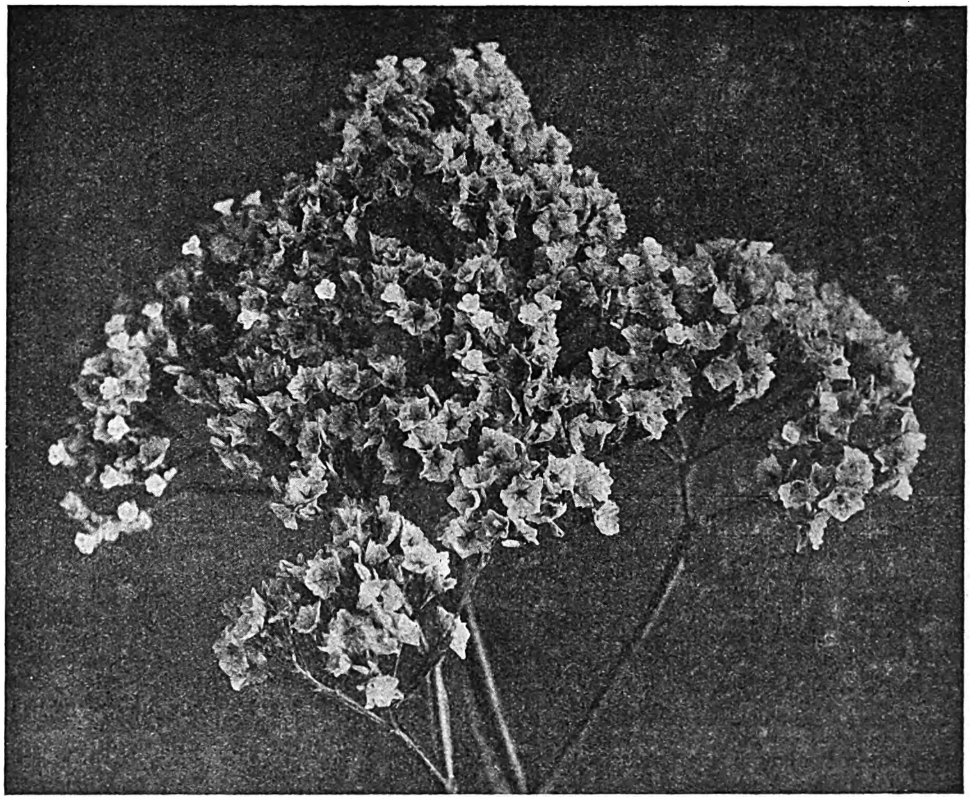

FIG. 201.—STATICE PROFUSA VAR. SUPERBA.

R.H.S. Award of Merit, Chelsea Show, May 22. Flowers blue and white. Shown by Mr. Chandler, Rolvenden Nurseries, Rolvenden. (see p. 385.)

French Beans.—Another sowing of these may be made; allow plenty of room between the plants as nothing is gained by overcrowding.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemont, Monkton, Ayrshire.

Vegetables.—Vegetable Marrows may now be planted out-of-doors in very rich soil or, better still, on a heap of manure; give plenty of water at all times, and peg down the young growths if exposed to wind. A sowing of a good early Cauliflower should be made to fill up any spare ground, and to supply a late crop, given favourable climatic conditions. Keep the ground occupied by growing Potatos well cultivated between the rows until the haulms almost meet, when they should be earthed up finally. On heavy, retentive soil the ridges should be raised to a sharp peak, so as to throw off the rain water, while on light land a flatter top is preferable. Maintain a steady supply of Lettuces by planting frequently, as Lettuce plants soon bolt in hot weather; small sowings of all salads should be made at intervals of ten days or so. The last sowing of late Peas should be made at an early date, as these seldom come to maturity if sown later. Hoe frequently among all crops when the ground is dry and remove weeds in the rows by hand before they attain any size.

Fruit Trees.—As Apples pass out of flower they should be sprayed with arsenate of lead or orchard spray fluid to prevent attacks by the many foliage and fruit destroying pests which assail them at this stage. If heavy crops set, the fruits should be thinned severely, one fruit on a spur being quite sufficient; if large specimens are wanted even more drastic thinning is necessary. A good top-dressing of any well-balanced artificial manure, hoed into the surface, should prove beneficial, as also will a mulch of farmyard manure on light soils. Where Pear trees are subject to black spot, spraying with a weak solution of lime-sulphur (one in a hundred) should be done at intervals, and a sunless day or evening should be chosen for the application so as to avoid injuring the foliage.

Strawberries.—Spring-planted stock for fruiting next year should have all flowers and runners removed as they appear, but if there are any blanks in the rows, runners from adjacent plants should be retained to fill them. Stir the surface soil frequently to encourage free growth.

Planting Annuals, etc.—All half-hardy annuals and perennials, including Dahlias and Begonias, may now be planted in their summer quarters if properly hardened off. Have the ground well broken up and enriched with plenty of organic manure for the above-named, but many annuals, such as Verbenas, Phlox Drummondii, Chrysanthemums, Lobelia and others, make less growth, and are more floriferous on only moderately rich soils. Only water these when absolutely necessary.

INDOOR PLANTS.

HERBACEOUS CALCEOLARIAS.

Although, perhaps, not grown so much in private establishments as they were a few years ago, herbaceous Calceolarias, if grown well, always make a brilliant display with their richly-coloured, showy flowers, and they are particularly useful for the embellishment of the conservatory or flowering-plant house during April, May and June. Seeds of a good strain may be purchased from any of the leading seedsmen; a particularly fine strain for those who dislike the usual brilliant showy colours, is Sutton's Art Shades, which embraces delicate soft shades only. The seeds should be sown in May, June or July, in well-drained pans, nearly filled with rough, turfy loam, surfaced with a compost of finely-sifted loam, leaf-mould and silver-sand. Water the soil with a fine-rosed can and sow the seeds immediately, no covering being required except a sprinkling of silver sand. Place the pans in gentle heat, cover with a sheet of glass, and carefully shade them from sunshine. Germination should take place within a fortnight, and when the seedlings are large enough to handle, prick them off into pans or boxes of rich, light soil. When pricking off the seedlings, every care should be taken of those which are weakly, it being an established fact that these usually produce the most attractively coloured flowers.

When of sufficient size, pot the seedlings singly in sixty-sized pots, using a compost of light, rich loam, leaf-mould and silver sand; place them upon a shelf in an airy greenhouse and afford shade from bright sunshine. At no stage of growth should these Calceolarias be coddled or placed in strong heat; when well growing, a cold frame, with plenty of air, will suit them admirably.

So soon as the plants are well rooted they may be placed in their flowering pots, using a similar compost as before, but of a rougher nature, with an addition of old Mushroom-bed manure passed through a half-inch sieve, and a sprinkling of Clay's fertiliser. Stand the plants in a cold frame, admit air freely when possible, spray them overhead during hot, dry weather, and give shade from bright sunshine. As winter approaches, cover the frames at night if frost is anticipated, and later remove the plants to a cool greenhouse where frost can be excluded during severe weather.

So soon as is necessary, tie the growths to neat supports; pinching is not advisable as the plants make fine, bushy heads if allowed to grow naturally. Watering with weak soot-water, alternated with liquid cow manure, may be practised with beneficial results so soon as the flower buds appear. At all stages of growth a sharp watch should be kept for greenfly, to which the plants are subject, and which must be destroyed by fumigation so soon as it appears; also, if the plants are kept in a dry atmosphere and a high temperature, red spider and brown spot will disfigure them very quickly; therefore they should be grown in a cool, moist, airy situation at all stages.

Propagation may also be effected by means of cuttings, but the strains of herbaceous Calceolarias now in cultivation are so very fine, that it is labour wasted to trouble with cuttings, as the great majority of plants raised from good seeds will prove extremely satisfactory.

It is hardly possible to maintain a succession of plants in flower, as they usually bloom in May if sown as previously mentioned; the earlier the sowing, the larger the plants when in flower. *A. T. Turner.*

STREPTOSOLEN JAMESONI.

This well-known greenhouse climber is a native of north Peru, where it was discovered at an elevation of 6,000 feet by Mr. William Lobb, while plant collecting for the late firm of Messrs. Jas. Veitch and Sons, Chelsea. Messrs. Veitch exhibited plants in bloom before the Royal Horticultural Society in June, 1847, and again in 1848, under the name of Browallia Jamesoni. Eventually, it was declared a distinct species, and was given its present name—Streptosolen (*streptos*, twisted; *solen*, a tube—a reference to the corolla tube of the flower). Loudon, also, refers to it as Browallia Jamesoni. He describes it as "a showy shrubby plant four to six feet in height, bearing corymbose cymes of yellow flowers." The colour of the flowers is best described as being deep yellow, shading to deep orange with age. Moreover, the colour deepens in accordance with the amount of sunlight the plant receives.

Somehow, this fine plant did not appear to have become popular, and soon fell out of cultivation. It was re-introduced, however, about 1882, and has, since then, been more or less common, being frequently met with even as a summer bedding subject, trained as standards or loose pyramids, the pots being plunged up to their rims in the soil.

The cultivation of Streptosolen Jamesoni is comparatively simple, as it can be grown quite successfully in nine-inch or ten-inch pots. The plants are trained in standard form with stems six feet in height.

It thrives best in a compost of three parts good loam, one part leaf-mould or peat, half-a-part of dried cow manure, and enough coarse sand to keep the whole open. The pots should be well-drained, and the plants grown in a light, sunny greenhouse with a night temperature of from 45° to 50°.

But to see this evergreen flowering plant in all its glory, it should be grown as a pillar subject and planted out in a suitably prepared border, or trained against the back wall of the conservatory where it may obtain ample headroom and abundance of light. So treated, and if the growths are allowed to hang down in a natural manner, there is not a more striking subject for the conservatory than this Streptosolen when it is in bloom.

The flowers, which are produced freely in terminal heads, commence to open about the end of February, and continue to make a most brilliant show until well into June. When the flowering period is over, the shoots should be spurred back well, but where extension is desired, a few of these growths, having first been shortened slightly, should be laid in to form the framework.

The plants should be encouraged to make clean healthy growth, by strict attention to watering and syringing, and the application of stimulants, and occasional fumigations to keep greenfly in check.

The propagation of Streptosolen Jamesoni is quite simple and may be carried out now, or in July. Young shoots, three or four inches in length, taken from the main stems, root readily in any sandy mixture, if given a little bottom heat and kept shaded. The young plants should be afforded much the same treatment as are Fuchsias in the first year. *H. H. C., Reading.*

TREES AND SHRUBS.

SHRUBBY SPIRAEAS.

The genus Spiraea contains a very large number of shrubby species, many of which are charming, elegant foliaged and free-flowering shrubs, highly valuable for garden decorative purposes. They vary in height from the fifteen to twenty feet of S. arborea and S. Lindleyana, to the eight inches of S. decumbens, a dwarf, trailing species suitable for covering rocks. Like so many other Rosaceous shrubs, a considerable number flower in the spring, S. Thunbergii being one of the first, but many flower during the summer and autumn, and few other genera of shrubs provide such a lengthy season of flowering, for a selection of species can be made to maintain a floral display from March to October. These Spiraeas are useful for extensive planting in shrubberies, or for forming bold masses in the pleasure grounds and on the outskirts of the woodland garden, and many of them are admirably adapted to waterside planting.

In the matter of cultivation the Spiraeas present no difficulties; most of them are moisture-loving, but they make good growth and flower profusely in almost any deep, well-worked soil, although it may be noted that a few species, including the early-flowering S. Thunbergii and the summer-flowering S. Douglasii, do not grow so well on calcareous soils. They respond freely to liberal treatment, however, and an occasional top-dressing of manure encourages the production of long, new growths, which seldom fail to give an abundance of blossom. Strong, clean growths, however, cannot be permanently produced on plants which are left unpruned, and the importance of pruning is worth emphasising. These Spiraeas fall naturally into two groups for pruning purposes:—(1) those which flower in spring on growths of the previous year, and (2) those which flower later in the year on the current season's growths. The first group, to which belong such species as S. arguta, S. bracteata, S. discolor, S. Henryi, S. prunifolia var. fl. pl., S. media (syn. S. confusa), S. Thunbergii and S. Veitchii, and which should be pruned immediately after flowering, is generally more neglected than the second group, which includes such species as S. Aitchisonii, S. arborea, S. japonica and its varieties, S. Douglasii, S Lindleyana and S. salicifolia, as these latter are best pruned during the dormant season and are seldom overlooked. The correct treatment for these latter plants is to remove old wood and weak shoots which can be dispensed with entirely, shortening the remaining vigorous growths to prominent buds, so that the resulting new shoots can grow freely and produce their flowers when developed. Similar treatment applies to the early-flowering species, but the operation is carried out during the active growing season and, if done immediately after flowering, the goowth of vigorous new shoots is encouraged, and these have ample room for development and time for ripening to produce the succeeding year's flowers.

Of the numerous Spiraeas available, each with its peculiar attraction, and all useful where space can be found for them, the following should find a place in every collection. S. Aitchisonii, a native of Afghanistan, with immense panicles of the pure white flowers, produced in July and August; S. arguta, known as The Foam of May, and one of our most beautiful spring-flowering hybrids, its closely-set, dainty, white flowers wreathing the branches from end to end; S. canescens, a tall, elegant, Himalayan species, with long, arching branches covered with small, pale pink or white flowers in June and July; S. discolor (syn. S. ariaefolia), a North American species forming a large, but graceful bush, its plume-like panicles of creamy-white flowers appearing in July; and S. japonica var. Anthony Waterer, one of our finest shrubs for front-row massing, producing a succession of rich, carmine-red flowers from July to October.

S. Menziesii var. triumphans should be included, for it is one of the most beautiful of the late-flowering Spiraeas, its vigorous growths being terminated in spikes of rich, rosy-red flowers from July to October, and, of course, S. prunifolia var. fl. pl., a very floriferous, free-growing shrub with long, arching stems, clothed with double-white blossoms in April and May, must be planted; also S. salicifolia var. paniculata, with growths four or five feet high producing a wealth of pink-tinted blossoms from July onwards.

S. Thunbergii, a neat Chinese species, the first to flower in March, and excellent for autumn colouration; S. Van Houttei, a tall, elegant, shapely grower of French origin, producing a wealth of white blossoms in May and June; and S. Veitchii, a handsome, June-flowering species and one of the best of the newer Chinese introductions, are all worthy claimants to positions. *W. A.*

FORSYTHIA INTERMEDIA VAR. SPECTABILIS.

The Forsythias are beautiful, early-flowering shrubs of easy cultivation, and F. suspensa is a widely-grown and popular garden shrub, its long, arching branches making it an ideal subject for furnishing pergolas or pillars.

F. intermedia var. spectabilis, however, is not so well known, nor so widely grown, although it is probably the most beautiful and showy of all the Forsythias. Raised in Messrs. L. Späth's Baumschulenweg Nursery, in the early years of the present century, it soon achieved popularity and proved its ability to withstand the severe winters of northern Germany and produce its glowing masses of rich, golden-yellow flowers in spring with unfailing regularity.

Of much stiffer habit than F. suspensa, it makes an ideal bush and is effective either as a single specimen, when its uneven growths give the plant a picturesque appearance, or in groups, when the wonderful profusion of flowers provides a beautiful display which lasts for several weeks in early spring. It is easily propagated by cuttings, which may be rooted in gentle heat during July or August, and it should be planted in good loamy soil in a sunny position. *A. M. H.*

HARDY FLOWER BORDER.

DORONICUM COLUMNAE AND D. PARDALIANCHES.

At a time of the year when there is not an over-abundance of flowers in the garden, Doronicum Columnae, with its profusion of yellow, Composite flowers, is most welcome. Requiring no special treatment and being perfectly hardy, it thrives well in almost any soil, and is easily propagated by division. Its flowers are borne on stems from one foot to eighteen inches in height and are yellow; the leaves are toothed and slightly pubescent, the radical ones being stalked and almost kidney-shaped, and the lower stem leaves auricled, while the middle ones are cordate-spathulate or simply cordate. The upper leaves are ovate-lanceolate and clasp the flower stems.

Another useful species is Doronicum Pardalianches; it is a much coarser growing perennial than D. Columnae, and differs from the latter in being more hairy, the flower stems more corrugated, and the radical leaves heart-shaped. There are also fewer stem leaves, and the upper ones are sessile and clasping. The flower stems attain a height of eighteen inches to two-and-a-half feet, and the flowers are larger, although not produced so profusely as those of D. Columnae.

This species is reputed to be poisonous, as the name Pardalianches or Leopard-strangler suggests.

Both of the above-mentioned Doronicums are herbaceous perennials and natives of Europe, flowering in early spring and summer. *Reginald E. Moore, University Botanic Garden, Cambridge.*

FLOWER GARDEN.

OENOTHERAS.

The genus Oenothera contains many beautiful species of value for summer and early autumn flowering. They are mostly suitable for the margins of shrubberies or mixed borders, a few of the dwarf species doing best on the rock garden, where they attract attention by reason of their large, showy flowers, which have the added charm of delicious fragrance. They are of easy culture, but are moisture-loving plants and thrive best in soils of a sandy nature which contain a good proportion of organic matter to enable them to retain moisture. Natives chiefly of North America and the north-west portion of South America, they are quite hardy in this country.

O. biennis, the common Evening Primrose, is a North American biennial now naturalised over a wide area in this country and throughout western Europe, and has given rise to several garden forms; of these, O. b. var. grandiflora (Lamarckiana) is, perhaps, the best-known, and is a widely-grown border plant of considerable decorative value, reaching a height of six feet under favourable conditions, and producing its large, pale yellow flowers throughout the summer.

O. glauca var. Fraserii is a fine plant for the front of the border, its yellow flowers, freely produced above cushions of ovate, denticulated leaves, being very effective, while O. fruticosa is a taller plant with bright yellow flowers produced in spicate racemes from June to September.

O. missouriensis is an attractive species of trailing habit, the margins of the leaves being covered with white, silky down. O. marginata (syns. O. eximia and O. caespitosa) is probably the most beautiful Oenothera, its exquisite, pure white flowers and wonderful fragrance endowing it with enchanting beauty and interest. The flowers generally open singly in the evening and last but a day, but they follow each other in quick succession so that the flowering season extends from June to September.

O. speciosa is a tall species with suffruticose stems bearing fragrant, white flowers which become reddish as they fade; they are freely produced from June to October and are useful for cutting, while O. Youngii is a dwarf plant of compact habit, bearing deep, golden-yellow flowers of great effectiveness, and is particularly suitable for a forward position in the border.

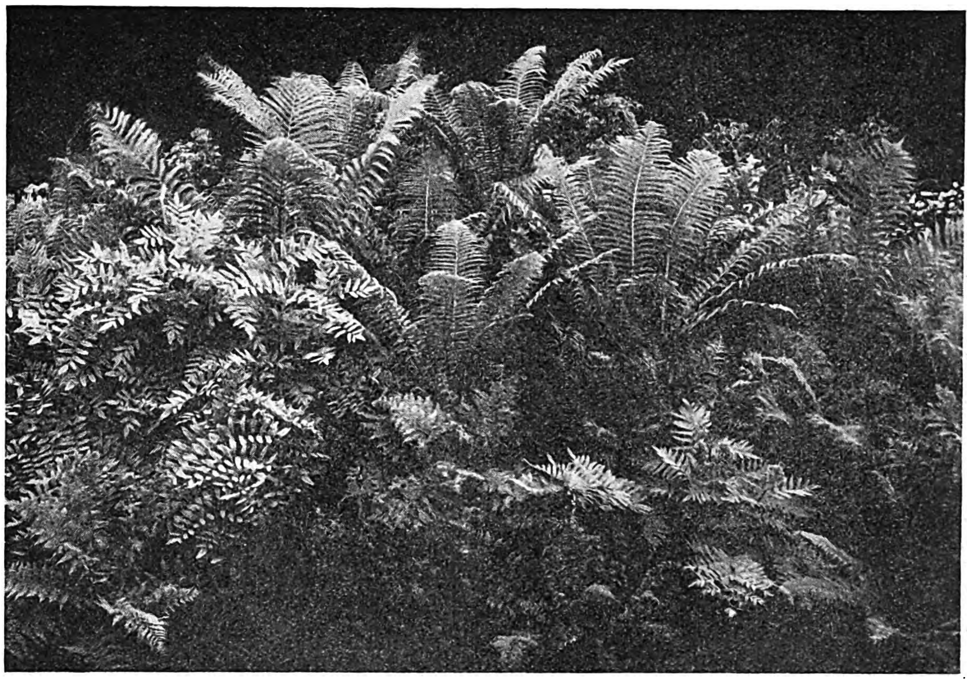

FIG. 202.—CHELSEA SHOW: MR. AMOS PERRY'S HARDY FERNS.
(see p. 389.)

There are several annual Oenotheras which are very effective, particularly in the evening, among them being O. acaulis, with large, white flowers; O. bistorta var. Veitchiana, yellow, with slight, crimson blotches; O. rosea, with rose-coloured flowers, and O. Drummondii, with yellow flowers. *A. M. W.*

BULB GARDEN.

PUSCHKINIAS.

In the garden it is necessary to look a long way ahead and to be constantly preparing for the future. One way by which this may be done is to take a note at, or soon after, the time when they are in bloom, of good plants which should be added to the garden at the proper season. Looking through the garden on April 27, the pretty little Puschkinias were still in bloom; these bulbous plants are allied to the Scillas or Squills, but are quite distinct in appearance although the popular name of Striped Squill has been bestowed upon them. They are principally natives of the Levant and have been named in honour of Pouschkin, a Russian botanist.

There is some little confusion regarding the name of the species which is the one almost monopolising the market, and which is the only one available to the many. It is usually held that its proper name is P. scillioides, and some assert that it is synonymous with P. libanotica, while others make them separate species. Viewed from a gardening point of view, this is really immaterial, so long as we get the plant we want, and this we may do by asking for P. scillioides or P. libanotica.

The Puschkinias grow to six inches or a little more in height, with channelled, lanceolate, green leaves and good-sized heads of many flowers, each nearly an inch across. They vary in colour from white to palest blue, generally lined with deeper blue, and are highly attractive. I have in my garden a plant with almost self-white flowers. There are a few varieties, but the really distinct form is compacta, which has been grown in some botanic gardens as P. libanotica var. compacta. This has larger and denser heads of flowers, but although desirable, is less graceful than the other or typical form.

P. scillioides is not by any means an expensive plant, and were there more demand for it, more bulb dealers would stock it than at present. Bulbs may be procured in early autumn and planted in light, rather sandy soil in a sunny position at a depth of from three to four inches and about the same distance apart. It may also be naturalised in grass. *S. A.*

NARCISSUS GRAELLSII, WEBB.

There is a figure of this charming little Hoop-petticoat Narcissus in the *Bot. Mag.*, t. 6,473, executed about 1870, but which, however, does the plant, as it is grown at Kew, a great injustice. The figure makes it appear to be a poor form of N. Bulbocodium, to which section it belongs.

Hailing from the Sierra de Guaderrama, the bulb is globose, and half-an-inch to three-quarters-of-an-inch in diameter, from which arise in spring narrow, linear leaves of varying length, from two to six inches, and usually two to four to the bulb. The flowers are carried singly in a sub-erect manner as in N. Bulbocodium, on short pedicels a quarter-of-an-inch to half-an-inch in length, arising from the base of a spathe which completely enfolds the ovary at the apex of a stem two to four inches in height. The ovary is somewhat boat-shaped, and three-eighths-of-an-inch long, from which arises the perianth tube an inch or more in length, funnel-shaped, and about half-an-inch in breadth at the open end, and greenish-yellow in colour, the green continuing through the centres of the segments to their apex, giving an unusual green and yellow striped effect. The segments are distinctly lanceolate, about three-sixteenths-of-an-inch in breadth at their points of attachment, six in number, and roughly two-thirds as long as the corona, carrying themselves erect until the flower nears maturity, when they tend to fall and cling around the base of the corona. The corona is half-an-inch long by as much in breadth, creamy-yellow in colour, very slightly frilled and having a fine, membranous appearance, caused by the transparent veins which run up the side. The flower has a distinct, funnel-like appearance due to the fact that the lines of the perianth tube are carried on by the corona. The whole is enhanced by the stamens, six in number, the anthers of which are of a rich golden-yellow colour, some three-sixteenths-of-an-inch in length, and attached by their centres to the tips of the filaments, the latter protruding in a declinate manner a quarter-of-an-inch from the outer rim of the corona; the style is of the same colour as the filaments but is even longer, with a slight upward tilt at its apex.

This Narcissus appears to be a very strong grower, judging by its behaviour at Kew, and once stock in sufficient quantity has been secured, it ought to be an admirable plant for the rock garden, for it produces two or three flowers to the bulb, and does well in any well-drained position in good loam. *A. Edwards, Kew.*

SCILLA ITALICA.

The Italian Squill, Scilla italica, may well be numbered among the smaller bulbs which are sadly neglected, especially nowadays, when rock gardening is so popular, as this Scilla is an excellent little subject for the rock garden, so well as being delightful in the grass or near the front of the border. It is recorded as having been first introduced in 1605, and is figured in the *Botanical Magazine*, t. 663.

S. italica is a really charming little Squill with strap-shaped leaves, six to eight inches in length, and dense, conical racemes of blue flowers, which are produced in April or May. Its height is given as about nine inches, but, as a rule, the stature is only about six inches. There is a purple-flowered variety, and other forms recorded are S. italica var. alba, white, and S. italica var. rubra, red. Although plentiful in a wild state, S. italica is little seen in gardens of this country, and is practically absent from bulb catalogues, nor have I ever seen the purple variety, purpurea, or the red or rose one, rubra, although the latter has been figured.

The white variety, S. italica var. alba, although not in bulb dealers' lists, is cultivated in a very few British gardens. The writer obtained it years ago, and lost it, but has again succeeded in securing it through the courtesy of a friend. It is very beautiful, with its conical heads of pure white flowers, and is quite hardy, but rather slow of increase, and is much prized by those who possess it. It is to be hoped that S. italica may once again come into the market. *S. Arnott.*

ALPINE GARDEN.

GYPSOPHILA REPENS VAR. MONSTROSA.

While Gypsophila repens is commonly cultivated in alpine collections, it is not so often that the lovely variety monstrosa (recorded as a hybrid with G. Stevenii, a plant, in itself, of no great decorative value) is met with. The reason for this can only be that it is unknown to many, for it is as easy to grow as G. repens, and is equally as easy to propagate, as it produces an abundance of shoots which, if secured as cuttings and inserted in a sand bed in a cold frame or under a bell-glass, from about mid-summer onwards, root readily and form good flowering plants by the following season.

G. repens var. monstrosa is, as its name would suggest, a monstrous form of the type, for it forms a bushy mass of much-branched flower stems from about nine inches to one foot high, and two feet or more through, furnished with a profusion of white flowers, sometimes faintly tinged with pink, and suggesting an exceptionally vigorous and bushy Tunica. Coupled with this charm of blossom is attractiveness of foliage, which, for a comparatively dwarf Gypsophila, is very ample and of a striking glaucous-grey, furnished by the typical waxy covering.

This lovely Gypsophila is hardy, free-growing and a good perennial, provided it is planted in full sunshine; it is ideal for planting in sunny crevices of cliffs or rock walls, or for furnishing beds in positions where it is not likely to smother more delicate subjects. *M. W.*

THE GENUS PRIMULA.

(*Continued from p.* 763.)

MOUPINENSIS (Franch.). Moupine P.

(Petiolares-Sonchifolia.)

A dwarf, perennial species with a loose tuft of thin, membranous leaves with egg-shaped or oblong-egg-shaped, blunt blades one-and-a-half inch to two-and-a-half inches long, tapering to a short, winged stalk, or almost stalkless; margins furnished with sharp, irregular, saw-like teeth; both surfaces more or less smooth. Flower stem about three inches tall, usually sparsely covered with yellow meal; it bears a terminal umbel of several pale rose-coloured blossoms. Corolla about one inch across, divided into five broadly heart-shaped, notched lobes; tube funnel-shaped, about three-quarters of-an-inch long, more than twice as long as the calyx.

Grows in elevated mountain pastures and on the margins of thickets, in north-western Yunnan, western China, and also in south-eastern Tibet.

Culture: Good loam and peat, in a damp, half-shady spot, is indicated.

MULIENSIS (Hand.-Mazz.). Muli P.

(Nivales.)

This truly magnificent, aromatic species produces a tuft of lance-shaped or oblong-lance-shaped, pointed leaves, nine to fifteen inches long, tapering to a broadly winged stalk; margins furnished with small, sharp teeth; upper surface smooth, green, under surface coated with snow-white or sulphur-coloured meal. Flower stem stout, fifteen to eighteen inches tall, bearing from four to nine fragrant blossoms on mealy stalks one to one-and-a-half inch long. Corolla nearly two inches across, varying in colour from rich rose-purple to rose-lavender, purple and violet, with sulphur meal in the throat; lobes broadly egg-shaped, notched, or at times toothed; tube yellowish-grey, funnel-shaped, about one inch long. Flowers in June.

Grows in moist, half-shady situations, on the margins and in forests and thickets of mixed deciduous and evergreen trees, especially Rhododendrons, on the mountains in various parts of Szechuan, from 11,000 to 12,000 feet above sea-level.

Culture: Grow it in rich, somewhat heavy loam, in a damp, semi-shady spot, well-drained in winter.

MULTICAULIS (Petitm.). Many-stemmed P.

(Malacoides.)

This dwarf annual is a sub-species of P. Forbesii. It forms a sparse tuft of green, orbicular-ovate leaves half- to three-quarters-of-an-inch long, heart-shaped at the base, contracted into rather slender, downy stalks about half-an-inch long; margins cut into shallow, rounded lobes, edged with sharp teeth; both surfaces clothed with minute, white hairs, more dense on the underside. Flower stems numerous, two to four inches tall, smooth bearing an umbel of ten to fifteen violet or rose coloured blossoms on slender stalks half- to three-quarters-of-an-inch long. Corolla concave, about a quarter-of-an-inch across, with heart-shaped, notched lobes; tube cylindrical, slightly longer than the calyx.

The name of the province in western China in which this plant was collected has not been recorded.

Culture: This Primula would probably succeed under the same cultural conditions as P. Forbesii.

MUSCARIOIDES (Hemsl.). Mossy P.

(Muscarioides.)

This attractive species, which is apparently biennial in cultivation, forms a rosette of somewhat fleshy, rich green, obovate-spathulate leaves three to five inches long, rounded at the tip, narrowed at the base into an obscure stalk; margins edged with broad, rounded, shallow teeth fringed with minute hairs; upper surface somewhat sparsely covered with minute hairs, underside more or less smooth. Flower stem erect, six to fifteen inches tall, frequently coated with yellow meal and bearing a dense, many-flowered spike, three-quarters- to one-and-a-quarter inch long, of deflexed, deep purplish-blue or deep reddish-blue-purple blossoms on very short stalks. Corolla narrowly funnel-shaped, about three-eighths-of-an-inch long, with egg-shaped or nearly square, slightly notched lobes; tube cylindrical, about three-eighths-of-an-inch long. Flowers in August and September. Introduced in 1906.

Grows in damp alpine pastures and in moist meadows by streams, in north-western Yunnan and south-eastern Tibet.

Culture: Grow it in peat and good rich loam in an open, well-drained position, abundantly supplied with moisture when the plant is in growth.

MUSCOIDES (Hook. f.). Moss-like P.

(Minutissimae.)

A very minute perennial species forming dense, moss-like tufts composed of tiny rosettes of egg-shaped-oblong or spathulate leaves from one-sixteenth to one-tenth-of-an-inch in length, stemless and dilated at the base; margins recurved and coarsely toothed; both surfaces more or less smooth and non-mealy. In some specimens the leaves are oblong and the teeth are confined to the tip. Flower stem almost wanting; flowers stalkless from the centre of the rosette. Corolla white or very pale blue, about a quarter-of-an-inch across, divided into five short, narrowly egg-shaped or heart-shaped, notched lobes; tube slender, cylindrical, about twice as long as the calyx. Not in cultivation.

Grows in wide patches intermingled with other extremely dwarf vegetation, in open places and in shallow soil over limestone rocks in the Kankola Pass, Sikkim Himalayas, at about 15,000 feet above sea-level.

Culture: As for P. minutissima.

MYSTROPHYLLA (Balf. f.). Hidden-leaved P.

(Dryadifolia.)

A beautiful, prostrate, evergreen species with a woody, elongated rootstock as much as six inches in length, densely clothed with the dried remains of previous season's foliage. The dense rosettes or tufts of deep green leaves have papery, elliptic, nearly circular or heart-shaped blades borne on distinct stalks twice the length of the blade, in all about three-quarters-of-an-inch long; margins furnished with rounded teeth or small lobes; upper surface sparsely clothed with minute, meal-producing hairs, underside coated with yellow meal. Flower stem under half-an-inch long, slender, erect, coated with yellow meal, bearing a solitary violet blossom immersed in the foliage on a very short stalk. Corolla flat, nearly one inch across, with wedge-shaped, bifid segments; tube cylindrical, about three-eighths-of-an-inch long. Flowers in July.

Grows in clefts in rocks and on the ledges of cliffs near Tsarong, in south-eastern Tibet.

Culture: As for P. dryadifolia.

NANA (Wall.) Dwarf Petiolate P.
(Petiolaris-sonchifolia.)

A beautiful, dwarf perennial species with the habit of the common Primrose. The somewhat small rootstock produces a rather sparse tuft of obovate-spathulate, nearly sessile or shortly stalked leaves one inch to two inches long, with their margins edged with irregular, sharp, saw-like teeth; upper surface bright, deep green frequently tinted bronze at the margins, underside paler and slightly mealy. Flower stem almost obsolete or very short, bearing about half-a-dozen Primrose-like, pale purple or lilac blossoms with a broad, white eye and a yellow mouth to the tube; they are supported on slender, slightly hairy stalks three-quarters-to one-and-a-half inch long. Corolla about one-and-a-quarter inch across, with broadly heart-shaped, entire or toothed, somewhat reflexed lobes; tube cylindrical below, slightly dilated upwards, longer than the calyx. Flowers in March and April. In cultivation in 1888 but now lost.

Grows in alpine pastures in the Himalayas, from Garwhal to Bhutan, at 10,000 to 14,000 feet above sea-level.

Culture: Good, friable loam and peat in an open, well-drained spot, abundantly supplied with water when in growth, with protection from damp in winter, is indicated.

NANOBELLA (Balf. f.). Lesser Pom-pom P.
(Bella.)

A very beautiful miniature species with tiny rosettes of spathulate leaves about three-eighths-of-an-inch long, with rounded or nearly diamond-shaped blades, blunt at the tip, gradually narrowing at the base into narrowly-winged, wedge-shaped stalks; margins edged with irregular or regular, sharp or rounded teeth; upper surface green, underside reticulate and coated with yellow meal. Flower stem about half-an-inch tall, slightly coated with yellow meal and bearing one deep bluish-purple blossom immersed in the foliage. Corolla about three-quarters-of-an-inch across, with overlapping, egg-shaped lobes cleft to the middle; tube funnel-shaped, equalling or slightly longer than the calyx, with a dense tuft of white hairs in the throat. Flowers in July. It is considered a sub-species of P. bella by Professor Wright Smith.

Grows in rocky mountain pastures on the Lichiang Range, in north-western Yunnan.

Culture: As for P. bella. *A. W. Darnell.*

(To be continued).

ADDITIONS TO THE LINDLEY LIBRARY.

The following books were added to the Royal Horticultural Society's Lindley Library during the last three months of last year:—

Aengelen, Petrus van. *De verstandige hovenier, over de twaelf maenden van't jaer* . . . Illus. 4to. Amsterdam, n.d. [16—].

Anderson, James R. *Trees and Shrubs: food, medicinal and poisonous plants of British Columbia.* Illus. 8vo. Victoria, B.C., 1925.

André, Ed. *Plantes de terre de bruyères, description, histoire et culture des Rhododendrons, Azalées, Camellias, Bruyeres, Epacris, etc.* 12mo. Paris, n.d.

Annals of Botany. Index vols. 31-40 (1917-26). 8vo. [1928].

Archer-Hind, Mrs. Laura. Trans. *See* Gothein, M. L.

Bailey, L. H. *The Garden Lover.* 8vo. New York, 1928.

Barrett, Otis Warren. *The Tropical Crops.* Illus. 8vo. New York, 1928.

Beal, Alvin C. *The Gladiolus and its Culture.* Illus. 8vo. New York, 1927.

Berlin. *Deutsche Botanische Gesellschaft.*—Berichte. Vol. 46. Illus. 8vo. Berlin, 1928.

Bolus, H. M. Louisa. *Notes on Mesembrianthemum and some Allied Genera* . . . Part I. Illus. 8vo. Cape Town, 1928.

Bostock, Frederick. *Examples of Lorette pruned Apple and Pear bushes.* Planted November, 1925, 2 and 3-year-old trees. Sm. 4to. Northampton, 1928.

Bower, F. O. *The Ferns (Filicales)*, treated comparatively with a view to their natural classification. Vol. 3: The Leptosporangiate Ferns. 8vo. Cambridge, 1928.

Brenchley, Winifred E. *Inorganic Plant Poisons and Stimulants.* 2nd ed. 8vo. Cambridge, 1927.

Britton, N. L. *Flora of Bermuda.* Illus. 8vo. New York, 1918.

Britton, Nathaniel Lord, and Millspaugh, Charles Frederick. *The Bahama Flora.* 8vo. New York, 1920.

Brookes, Gilbert. *The Complete British Gardener.* . . . 12mo. 1779.

Brown, E. T. *The Easy Gardening Book.* 8vo. 1927.

Cariot, Abbé. *Etude des fleurs: botanique élémentaire, descriptive et usuelle.* 6th ed. Vol. iii: *Flore horticole et dictionnaire.* 12mo. Lyons, 1879.

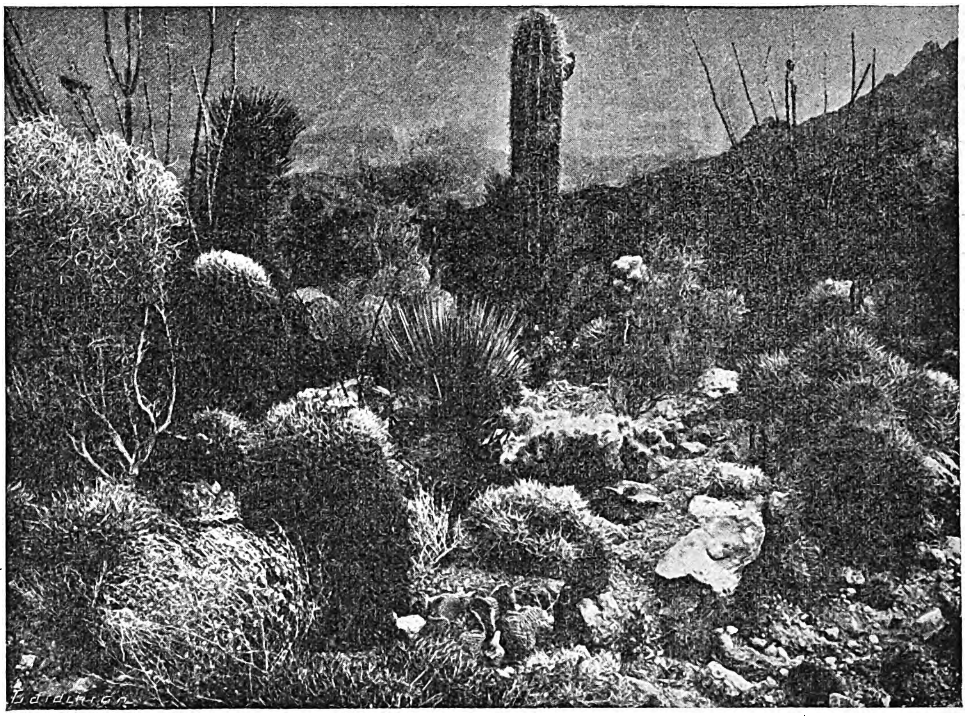

FIG. 203.—CHELSEA SHOW: A "DESERT GARDEN."
Exhibited by Mrs. A. Sherman Hoyt.
(see p. 390.)

Carpenter, George H. *The Biology of Insects.* Illus. 8vo. 1928.

Centralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten. Zweite Abteilung . . . Herausg. von . . . O. Uhlworm, etc. Vol. 74. Illus. 8vo. Jena, 1928.

Chanter, Charlotte. *Ferny Combes.* A ramble after Ferns in the glens and valleys of Devonshire. 3rd. ed. Col. pls. 8vo. 1857.

Chasset, Louis. *Essai de détermination des fruits (Poires).* Illus. fol. Villefranche, 1928.

Cochet-cochet, and Mottet, S. *Les Rosiers.* 3rd. ed. Illus. 12mo. Paris, 1909.

Cockayne, L. *Monograph on the New Zealand Beech Forests.* Part II: The forests from the practical and economic standpoints (N.Z. State Forest Service, Bull. 4). Illus. 8vo. Wellington, 1928.

Connoissance et culture parfaite des belles fleurs. 12mo. Paris, 1696.

Correvon, H. *Flore coloriée de poche à l'usage dans les montagnes de la Suisse, de la Savoie, du Dauphiné, des Pyrénées, du Jura, des Vosges, etc.* 2nd ed. Col. pls. 8vo. Paris, 1898.

Cran, Marion, Mrs. George. *The Joy of the Ground.* Illus. 8vo. 1928.

Dahuron, René. *Traité de la taille des arbres, et de la manière de les bien élever; avec un nouveau traité de la culture des melons.* Illus. 12mo. Liége, 1699.

Davis, Walter. *Plant Propagation.* Ed. by W. D. Drury. Illus. 8vo. 1922.

Drury, W. D. *Garden Animals: Friends and Foes.* Illus. 8vo. 1922.

Edinburgh, Royal Scottish Arboricultural Society. *Library Regulations and Catalogue.* 8vo. Edinburgh, 1928.

Ellis, E. T. *(Ed.). Black's Gardening Dictionary.* 2nd ed. 8vo. 1928.

Engler, A. *Das Pflanzenreich*;

—— —— 93. Niedenzu, F. *Malpighiaceae.* Part ii. 1928.

—— —— 94. Niedenzu, F. *Malpighiaceae.* Part iii. 1928.

Fortune, Robert. *Two Visits to the Tea Countries of China and the British Tea Plantations in the Himalaya.* . . . 3rd. ed. 2 vols. Illus. 8vo. 1853.

Gardner, W. *Fertilisers and Soil Improvers*; description, application and comparative value. 8vo. 1927.

Gothein, Marie Luise. *A History of Garden Art.* Ed. by Walter P. Wright. Transl. from the German by Mrs. Archer-Hind. 2 vols. Illus. 8vo. London and Toronto, 1928.

Greeves-Carpenter, C. F. *The Care of Ornamental Trees in planting*; fertilising, pruning, tree surgery, and spraying. 8vo. New York, 1928.

Griffiths, David. *The Production of Tulip Bulbs.* (U.S. Dept. Agr. Bull., 1082). Illus. 8vo. Washington, 1922.

Groen, Jan van der. *Den Nederlandtsen hovenier, zijnde het I. deel van het vermakelijck landt-leven.* Illus. 4to. Amsterdam, 1670.

Hetley, Mrs. Charles. *The Native Flowers of New Zealand.* Col. pls. fol. 1888.

Holman, Richard M., and Robbins, Wilfred W. *Elements of Botany.* Illus. 8vo. New York, 1928.

(To be continued).

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TULIPS.

SINCE J. G. Baker published his revision of the Tulipae in these pages* forty-six years ago, no sustained attempt has been made towards a closer consideration of the genus as a whole than Baker or his predecessors were able to make, and we are, apparently, not appreciably nearer to the birth of a monograph on the genus than was Baker himself. Dykes had the preparation of a monograph as well as a handbook of Tulips in mind for some years before his death, and as all those must who would prepare a monograph worthy of the name, had made a beginning by first-hand acquaintance with all the species and quondam species he could obtain. That he had gone a long way towards the achievement of his object was manifest when his collection of Tulip species was distributed a year or two ago. Dyke's premature death did not altogether close the door for the time to the scientific study of the genus he had in hand, for when he moved his collection of Tulips from his Charterhouse garden to that of the John Innes Horticultural Institution at Merton, his enthusiasm for the genus attracted W. C. F. Newton, of the staff of the Institution, who was willingly drawn into collaboration with Dykes in his study of the genus, and, so far as his health permitted, continued it after Dyke's death until he, too, was called.

Had these men lived, both botany and horticulture would have been the richer as the result of a brilliant association. By the time they were cut off, however—Dykes in 1925, and Newton two years later—the fruits of the work each had done and the knowledge they had gained had not taken definite shape on paper. Such fragments that exist of Dykes' exploratory work on Tulips are shortly to be published by his widow, and a summary Newton had prepared shortly before his death for a revision of the genus is now given to the world by Sir D. Hall in his recently published work on the Tulip.†

In his proposed revision, Newton followed Boissier in his division of Tulips into two main sections characterised by the presence or absence of hairs on the base of the stamens. Boissier named the first Eriostemones and the second Leiostemones, and in each there are groups of species which Newton evidently regarded as so closely related that he would have segregated some of them into clones and reduced them from specific rank. The difference between clonal rank and specific rank is well explained by Sir D. Hall, and as the term clone, although in common botanical use in the United States of late years, is comparatively new to non-technical horticultural readers here, we may offer the explanation that it represents the perpetuation of some peculiarity in a plant, by vegetative propagation, that is, by division, by offsets or bulbils, where they are formed, as in some bulbous plants, or by cuttings, but not by seed. The plant which gives rise to a clone—a "sport," for example—is itself the produce of seed resulting from the mating of the germ cell of a pollen grain with the ovule of a plant, and as many plants are self-fertilising, a single example may give rise to a clone without any fertilising by pollen from another example of the same species.

Beyond the two main sections already mentioned, there is a large group of Neo-Tulipae and Gesneriana Tulips, of which the specific position is doubtful. Some of them may be truly wild and some of hybrid origin which have maintained definite characters through prolonged vegetative reproduction. The persistent maintenance of their characters by Tulips of known hybrid origin is well exemplified by the variety called Keiserkroon, which, as the author observes, has been propagated by offsets for 150 years, without undergoing any apparent alteration.

Sir D. Hall tells his readers all that is known of the history of Tulips, the word being used to denote garden hybrids, and although, humanly speaking, as plants go, they are of barely respectable antiquity, having emerged from Turkey into western Europe less than four centuries ago, their history is curiously nebulous.

The story goes that when, in 1554, Busbequius, Austrian Ambassador to Turkey, was travelling between Adrianople and Constantinople on his way to the capital, he saw some flowers which were new to him, and in writing home about them he called the flowers "tulipam," which, apparently, was his interpretation of the word "tulband," the Turkish name for the Tulip, from its resemblance to a tulband or turban. Whether Busbequius coined the name or, as is more likely, misunderstood his Turkish informant, is not clear; but if the story is a little thin, it is the best historians have to offer of the origin of the word Tulip. Whatever the source of the name, it is tolerably clear that, on his return to Vienna eight years later, Busbequius took with him some Tulip seeds and bulbs, which he gave to Clusius, the botanist, and they were probably the beginnings of the introduction of the Tulip to western Europe, and a few years later to this country.

Exactly what varieties the first comers were is not clear, but it seems likely that they were hybrids which had probably originated ages before, and possibly by chance, in some eastern garden. The author is convinced that their source is to be found in the group of Neo-Tulipae and Gesneriana Tulips, of which the origin is uncertain. But, however it originated, it seems certain that on its first escape from Turkey to the west the garden Tulip was already a made flower, for, "except in minor points of shape and size, the garden Tulip still possesses no characters which were not present in the original introduction."

As the Tulip has altered so little in the four hundred years it has been in cultivation outside Turkey, we may regard it as an old plant. Sir D. Hall surmises that the garden Tulip may have reached Turkey from Persia, and finds some support for the theory in the fact that both Turks and Arabs call the Tulip by its Persian name—*Lalé*—a word in regular use in Persian classical literature from the tenth century, always in reference to Tulips in relation to gardens. As Persia is the native home of several Tulips and may possibly hold the matrix of the race, it requires no effort of the imagination to picture it as the home of the first garden Tulip.

Few hybrid plants have attracted such sustained interest as garden Tulips, and few, probably, have remained so little altered through centuries of propagation, or proved themselves of such incomparable value for garden purposes; so it is no matter for surprise that a considerable part of the book is devoted to them. In no sense is it a conspectus or an enumeration of Tulipae; indeed, the author expressly disclaims any attempt to deal at length with the many rare Tulip species which are seldom available to enthusiasts, and a single chapter is allotted to such Tulip species as are current coin, as it were, among the men for whom species of plants take pride of place. Their experience in the cultivation of Tulip species will not, perhaps, invariably lead them to the same conclusions as those at which the author has arrived in regard to the difficulties attendant on the cultivation of wild Tulips in general; and in accentuating these difficulties the author is unduly pessimistic. The point probably turns as much on unskilful cultivation as on our climate. Garden Tulips are almost everybody's plants, but the species are not for careless gardeners, or for cold or clammy soils; nor, for the matter of that, are species of several genera, of which the successful cultivation has been found by accident or experiment. A bad spring followed by a wet and cheerless summer undoubtedly works havoc among many Tulip species, as it does with other bulbous plants; but, in congenial conditions, which are not difficult to assure, T. dasystemon, T. Ostrowskiana, T. Kauffmanniana, T. Kolpakowskiana, T. Batalinii var. linifolia, T. persica var. Greigii and T. Sprengeri, among others, answer to careful cultivation, and the bulbs do not seem to need the early lifting and baking recommended by the author. It would, perhaps, be stretching the truth to state that T. sylvestris is difficult to eradicate, but it has an astonishing power of clinging to the ground in many out-of-the-way places.

As the author points out, any attempt to classify garden Tulips on systematic lines must fail; all that can be done is to range them in convenient groups composed of varieties of which the habit, shape of flower and flowering period coincide. This will serve well enough until, as is happening in the case of Daffodils, multiplication of varieties bridges the gaps between the groups; then, no doubt, ingenuity will find some appropriate remedy.

Signs are not wanting that the prevailing classification of the May-flowering Tulips into sections of Darwin, Rembrandt, Dutch, English and Cottage varieties has already been stretched beyond convenient limits, and with persistent intercrossing this was only to be expected. The crossing of Darwin Tulips with the Duc van Tholl varieties has produced the group named after Mendel, while another group of so-called Triumph Tulips is the result of crossing early-flowering varieties with Darwins.

The author anticipates the eventual breakdown of the classification now in general use, which, as has been already explained, is based purely on convenience, and (p. 116) proposes a revised classification centred simply on shape and colour of the blooms. No doubt, appropriate names will be evolved for the groups and subgroups, and after all, in such matters nomenclature is merely a matter of human convenience. Names for Tulips and their groups are often chosen haphazard, and forgetful of this, many must have found themselves wondering how or why Darwin's name came to be attached to a group of Tulips.

In his interesting account of the origin of the Darwin Tulips the author explains that about the year 1889 the name was chosen merely to distinguish the particular group from the old Dutch stock out of which it arose. We do not know what train of thought led Messrs. Krelage to associate the name of the savant with these Tulips, but we may, at least, regard it as a graceful compliment. The same may be stated of the Rembrandt Tulips, which are broken forms of the Darwin group.

The origin of the so-called Cottage Tulips is more obscure, and summarising the author's account of it, in what to many will be the most interesting chapter in the book, the conclusion is reached that the class was originally composed of "throw-outs" by Tulip fanciers. These discarded flowers were attractive enough to be preserved, but not sufficiently good to be included in the classes of the florists who ruled the Tulip world then. All who have raised anything themselves, animate or inanimate, will know just what is meant, and the old story of the veterinary surgeon who advised his niece, recently delivered of triplets, "to keep that one," comes irresistibly to mind.

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* *The Gardeners' Chronicle*, 1883.

† *The Book of the Tulip*, by Sir A. Daniel Hall, K.C.B., F.R.S. London: Martin Hopkinson, Ltd., 1929. 21s. net

The peculiarity known as "breaking" of Tulips has always been of interest to growers, whether they regard it as a curse or a blessing, and in view of the research which has been in progress for some time at the John Innes Horticultural Institution, we had hoped that the author would have been able to make a definite pronouncement to the effect that "breaking" is the result of infection by a virus. Sir D. Hall is as yet unable to do that, but one cannot read his absorbing account (Chapter V) of the methods by which the problem is being attacked, without reaching the conclusion that it is within reasonable distance of solution.

The fact that true species of Tulips do not break may have some bearing on the question, as may the readiness of the Cottage group to break, and the comparative resistance to breaking of the Darwins. If the cause of the peculiarity can be discovered, a prophylactic will doubtless follow, and that should be of signal service to Tulip growers in meeting the demand of the day for self-coloured flowers. On the other hand, when the wheel of fashion creates a demand for broken flowers, science will show the way.

The *format* of the book is much the same as that of the Handbooks issued by the same house, but the price is more than half as much again. This may be due to the twelve coloured plates with which the volume is furnished. These are from drawings by Mr. Osterstock, and it is enough to state that the artist's fine work would have been better served by some process of reproduction more satisfactory than that chosen by the publishers. A short glossary would have helped non-technical readers to cope with such words as polyploid and hetraploid, homozygous and heterozygous, among others; and numbering of the plates would have made for convenience. The book is from the pen of a life-long student of Tulips, who has set down all he knows about it for the guidance of other students, and it is, perhaps, needless to add, that it will be the standard handbook on Tulips for many years to come.

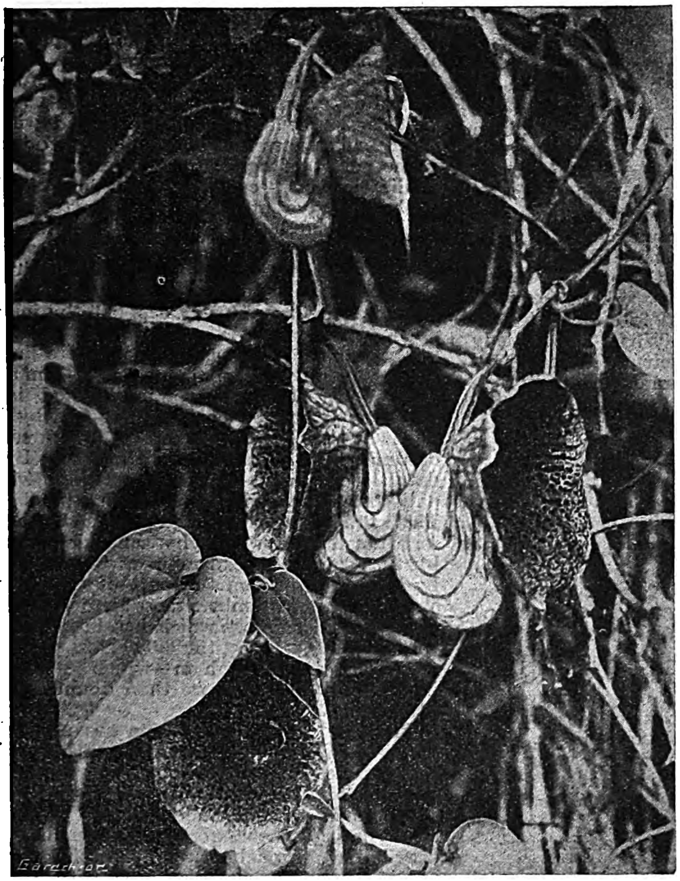

FIG. 204.—A FINE ARISTOLOCHIA SPECIES.
Found in the rain forest at 8,000 feet altitude.

MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XXII.—Retreat.

We stayed quietly in camp resting while all this was going on; I had been savagely bitten in the leg by a poisonous fly, and the subsequent swelling of the muscle had made me rather lame. Buttercup, too, was suffering from the bites of blister flies and leeches, which had festered badly. However, as May 14 seemed likely to be our last day here, I determined to return to Cha Che and follow the track so far as I could towards the pass, consistent with getting back to camp the same evening.

The weather looked far from promising, when I crossed the big torrent below Cha Che by the flimsy bridge, but the water was lower than it had been when we had crossed previously, and, in fact, I went over dry shod. I reached the ledge where we had camped in an hour-and-a-half, and finding the path without difficulty, started up the steep, wooded shoulder. A climb of some 1,500 feet brought me out of the forest into the open whence the path slanted up a wind-swept face, very steep and rocky, with scattered trees of Oak, Alder, and Birch, and clumps of Vaccinium and Piptanthus, the latter in flower; the grass was only just springing up after the melting of the snow. Presently the path plunged into forest again, where I noticed most of the Rhododendrons of this zone, but only R. arboreum in flower. The 'Irroratum' had caught it again here, as its blackened shoots testified. Then came another ascent, and a second open face, even steeper than the last, whence I reached the next shoulder, and halted, at an altitude of 8,000 feet. From here I could see some distance up the valley. I was wet through as it had been raining for some time, and the keen wind cut like a knife, until I was gelid with cold. The view was ruined by great bursts of mist which came rolling up the gorge, muffling the peaks, but I could discern the main features. Right away to the head of the valley there was no change except that the river gorge grew narrower and deeper, its walls more perpendicular, the forest more dense.

In order to avoid the cliffs, the track for some distance kept high above the river, and probably never again dropped below 8,000 feet, although a subsequent view up the valley from the Kaso ridge showed that it descended to the river again higher up, where the gorge gaped a little. Now, however, so far as the eye could see, the gorge overflowed with forest, broken here and there by drab-coloured escarpments, and the track continued up and down over these razor-backed spurs and across raw faces of open park land, dipping down into the forest wherever a torrent seared the slope, until everything was swallowed up in the clouds which clung around the pass. The final ascent must needs be precipitous. The one absolute certainty now was that the Delei valley was water worn; it never had been glaciated. Gone, therefore, was the last hope of ever establishing a summer camp near the pass. At the highest point reached, among the rocks, I found the first Primula of the year, in fruit; and although it was, I believe, only P. denticulata, had it been the most astounding Primula ever caught, I could not have greeted it with more extravagant joy! A joy which the members of the syndicate could hardly be expected to share!

On the way back to Cha Che in the forest, I saw a huge Arisaema consisting of a chocolate and silver-striped balloon of a hood, with reticulated elephant's ears on each side, protecting a spadix like a fishing rod from which trailed several feet of line. In summer the three-lobed leaf grows three feet high with a span of nearly four feet.

I reached the torrent at 4.30, only to find that it had risen several feet, and an immense wave

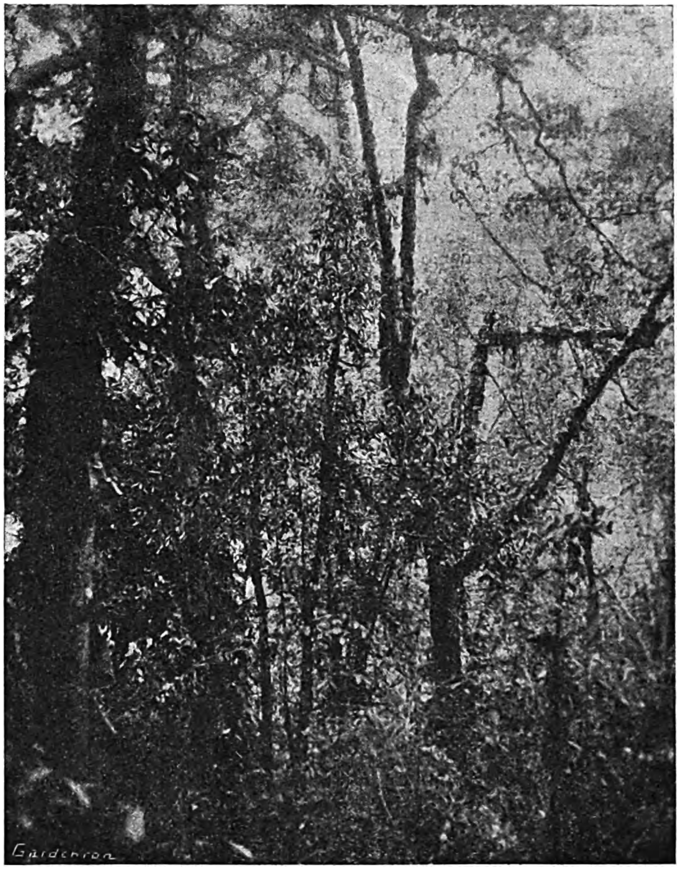

FIG. 205.—TEMPERATE RAIN FOREST.

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; March 2, 16, 30; April 13, 27; and May 18, and 25, 1929.

was rushing over the bridge of sticks, which was twanging like a taut bow-string; I made an attempt to cross, but soon found that it was suicidal; another step, and I should certainly have crossed the Styx for good and all. So I sat down to wait, and think, ate my lunch ration, and stamped about to keep warm. At the end of an hour the water had risen slightly. I dragged some long Bamboos, which had been used to make a ladder for scaling the cliff, to the water's edge, and tried to jamb them so as to reinforce the bridge, but being unable to secure them on the other side, they were instantly torn from my grasp, and went bucking down the rapids. I saw nothing for it after that but a night out—unpleasant thought, in my wet state, without food or fire. However, when the snowfields above froze up in the early morning the water would quickly fall, and I should be able to cross.

It was now dusk. Suddenly two figures appeared on the opposite bank, one of whom was our liason officer. I shouted and made signs, and they went away, presently to reappear with a long Bamboo and a coil of creeper. A length of creeper was thrown to met the Bamboo thrust across; I got hold of it, secured it at my end with the creeper, the Mishmis did the same at their end, and behold a bridge breasting the wave! In a twinkling one of the men slid across, took my haversack, and then it was my turn. A half-inch Bamboo, with a bent sapling vibrating like a tuning fork as a hand rail, between me and Nirvana! Did I hesitate? I looked at my nailed boots—how useless in this crisis!—gripped the shaking hand-rail, and started on the journey before I had time to wonder whether, if I slipped, the force of the water would drag me from my hold or break the rail. After all, it was not far, nor particularly difficult, and I was much too cold and hungry to hesitate. I was quickly across the rapid, and leaped into the river beyond, where it was knee-deep but gentle, waded ashore, and started for camp.

It was now dark, and we hurried along, risking many a fall on the narrow track, getting in soon after seven, just as Buttercup was starting off with food and clothing to rescue me, fearing that the Mishmis had been unable to reach me; in that event first aid was to be thrown across the torrent, with a promise of assistance in the morning. My deliverance I owed to Buttercup's native wit; for, noticing a big rise in the main river, he had concluded that the torrent had also risen behind me, cutting me off, and had dispatched the two Mishmis so soon as I was overdue. His only fear was that I might have crossed a second torrent higher up the valley, in which event the rescue gang could not have reached me, so late in the day.

Meanwhile, the "Gam" from Tablekon had returned with his troops to take us back to the village; only he insisted on being paid first. As there was no time to fight this demand, I agreed, thus establishing a dangerous precedent.

May 15 was very wet, so the coolies decided not to travel, although during a lull most of the kit was taken across the river. We sat tight in our tents, and it struck me that our forces were now neatly divided—or at least, our kit was. If the Mishmis wanted to hold us up, now was their chance; but I doubt if it occurred to them. And as I came to have no very high opinion of the independent Mishmis, I will pay them this tribute now; childish, unreasonable, dishonest and obstinate as they were in many ways, when they had once undertaken to do a thing they did it. The difficulty was to persuade them to undertake anything!

The next day it was still raining steadily and never looked like stopping. The Mishmis had finished their food, and I supposed they would disperse to their villages. No, they were willing to take us back, rain or no rain, which was greatly to their credit. So we packed up our sodden tents, crossed the river, and stood by for two hours while the rest of the kit was laboriously slung over. At one o'clock we left that fatal rope bridge and started in pouring rain on the horrible climb up the cliff face of the long gorge. It was a nightmare march, and beyond satisfying myself that the golden Abelia was still there, I took no heed whatever of the vegetation; it would have required a prize indeed to have aroused any enthusiasm in me. The coolies marched and climbed up the slippery ladders like men possessed, thereby earning our grudging admiration. It was dusk when, soaked to the skin, cold, hungry, tired, thoroughly disgusted with everything, and covered with leeches, we at last reached our old camping ground in the agricultural lands of Tablekon; but the last coolies did not stagger in until nightfall. They must have been fed up!

And so ended the first round, in the complete discomfiture of the 'white hopes'! *F. Kingdon Ward.*

FERTILISERS FROM THE AIR.*

Science, speaking in the name of Sir William Crookes, predicted some twenty years or so ago that the world was approaching an inevitable food shortage. The green plant, which makes all the food of the world, could not get enough raw materials to do its work sufficiently fast to supply all mankind. Unless, then, the green plant was speeded up, man must starve. The reason why the green plant did not work fast enough was because the earth failed to supply it with sufficient raw materials. What was chiefly lacking was nitrogen. Without sufficient nitrogen in the form of salts of ammonia or nitrates, the green plant is unable to run its manufacturing process for the production of sugars and proteins at anything like maximum capacity. The green plant has to slow down and mankind, in consequence, to die down. Lack of available nitrogen has always limited life on this planet.

Now, however, science has falsified its own gloomy predictions by making combined nitrogen plentiful and cheap. In the past the supplies which the green plant used were derived from manure heaps, from the nitrate beds of Chile and from ammonia liquors distilled from coal and fixed as sulphate of ammonia. Now these supplies are every day becoming of less relative importance owing to the almost incredible rapidity with which synthetic nitrogenous fertilisers are being produced from the air.

There is, indeed, nothing new under the sun, and the marvellously ingenius inventions of scientific men which have led to this great new industry find their counterpart in the cunning contrivance of Nature herself, whereby some of the simplest micro-organisms of the soil are engaged also in making fertilisers from the air. Some of these micro-organisms make nitrates and some—the so-called nitrogen-fixers which occur in land and sea—bring the nitrogen into more elaborate combinations.

But all these natural processes are too slow for the modern world, and in the factories at Billingham in this country, and in those of Germany, France and elsewhere, nitrogen of the air is now being made into fertilisers at the rate of over one million tons per year. Although, industrially, this is a vast quantity, looked at cosmically it is a mere bagatelle; for the stores of nitrogen in the atmosphere are so vast and are being so continually replenished that at this rate of usage, Billingham and all other factories could go on doing their best for 4,000 million years without using up the supplies.

Largely in consequence of this rapid production of nitrogen, the farmers of the world are acquiring the habit of using more nitrogen and other fertilisers. Before the war, in 1913, farmers throughout the world used annually about three-quarters-of-a-million tons of nitrogen in all its various forms. In 1928, the total agricultural consumption amounted to nearly one-and-a-half million tons of nitrogen. Different nations of the world are acquiring the nitrogen habit at different rates. Holland leads the way, followed closely by Belgium. Germany comes next, employing about one-third of the amount per acre used by Holland. The fourth place in the intensive use of nitrogen is occupied by Japan, applying per acre about a quarter of the amount used by Holland. Egypt comes next and then Great Britain, which uses little more than half of the quantity that Germany applies to the acre. France lags behind England, and, interestingly enough, the use of nitrogenous fertilisers in the United States is well below that of western European countries. We have borrowed so much from the United States that it is pleasant to find that in the nitrogen habit there is something they might well borrow from us.

It is not surprising, having regard to the extension of manufacture of nitrogenous fertilisers, that the present price is low. Indeed, it might be stated that the only things which are cheap in the world to-day are nitrogenous fertilisers. This cheapness provides the farmer with the best means of reducing costs and obtaining improved economic results from his farm; for it has been shown by very full and careful experiments that the use of nitrogenous fertilisers on soils adequately provided with the other substances necessary for production, is the surest of agricultural investments. The application of 1 cwt. of nitrogenous fertiliser to the acre gives an increase of 2½ cwts. per acre of cereals and 1 ton of "roots" in the case of Potatos or Swedes; and so on for other crops.

The great factory at Billingham which is ensuring that this country shall have an adequate share in this new industry has, like the industry itself, developed at a great pace. Billingham began producing nitrogenous fertilisers in 1924, when its output (of sulphate of ammonia) was 50,000 tons. This was doubled in the following year, had increased five-fold by 1928, and is expected to reach a total of three-quarters-of-a-million tons per annum by 1930. By this date the fertilisers manufactured there will not only contain nitrogen, but also other plant foods. This work has been rendered possible by the bold forethought of Lord Melchett and his colleagues, by the genius for leadership of Colonel Pollitt, by devoted work on the part of the scientific staff which now numbers more than 150, and by the splendid support which has been given to the directing staff by the 6,000 workers already employed at Billingham—which number it is expected will be more than doubled in two years' time.

The products of Billingham are not handed on to the farmers of the Empire until they have been tested thoroughly at the Agricultural Station of Imperial Chemical Industries at Jealott's Hill, near Maidenhead. When they have proved their worth, the fertilisers are distributed throughout the Empire by the several organisations associated with Imperial Chemical Industries; thus this great industrial concern is lending powerful aid to what is, after all, the first and most essential of all industries, namely, agriculture.

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* Summary of a Lecture given by Sir Frederick Keeble, F.R.S., at a public meeting held at the Mansion House on April 24, under the auspices of the British Science Guild.

GARDEN MANURES FOR JUNE.

In considering the value of the various artificial manures in existence, nitrogenous, phosphatic and potassic, the latter is probably the least understood and, because of this, is the least in demand, yet the increased yield and value of crops grown on land which has been well-dressed with one or other of the forms of potash are so striking that one cannot help suggesting that more could be used profitably.

It is a somewhat stereotyped dictum that all soils, and particularly the clay soils, contain a natural store of potash, far in excess of the immediate needs of the plant, and many of the text-books labour this fact; it is also assumed that this store of potash is gradually liberated during the processes of cultivation and under natural atmospheric influences, but while this is true, it may not be the whole truth. Processes of cultivation and atmospheric influences frequently fail to liberate the latent store of potash in certain soils at a sufficiently quick rate to meet the maximum needs of the plant during periods of active growth, and it is then that its artificial application, in a form which quickly becomes available, is of the utmost benefit to crops, and while this is true, to some extent, in heavy soils where sufficient potash is known to be present, it is often a controlling factor on some of the lighter lands with less potash content in any form.

The use of potash by the plant is not confined to one particular groove; it plays an important part in the elaboration of sugar in fruits, thus enhancing their nutritious value. A similar process helps in the manufacture of starch in roots, and Potatos grown with plentiful supplies of potash are stated to be of better quality and more "floury" in texture than those grown with insufficient potash. It is stated to have an intensifying effect on colour in flowers, by facilitating the secretion of the pigment which produces it, and, reasoning along these lines, it does not seem illogical to suggest that it may even facilitate the secretion of essential oils in scented plants and thus increase their fragrance, but the latter is only a suggestion, and I have had no opportunity of testing it.

Finally, it may be noted that some wonderful results have been obtained by the liberal use of potash manures on grass, and while most of these experiments have been made in the interest of food value for stock, there is abundant evidence to show that it favours the production of finer grasses and we may learn from them that in the feeding of lawns the potassic element should not be neglected.

I have on previous occasions referred to the importance of "balance" of elements in complete manures, and suggested that the potassic element does not always receive sufficient thought, therefore it may be instructive to consider its importance in relation to the health of the crop, particularly in the balance of potash and nitrogen. Experiments at the Cheshunt Research Station have demonstrated that stripe in Tomatos is caused by an excess of nitrogen in proportion to potash, and that the best antidote to the disease is a liberal dressing of potash. Similarly, there is evidence to show that chocolate spot in Beans can be kept in check by liberal applications of potash. At Long Ashton experiments demonstrated (as shown in these pages) that the winter killing of green vegetable crops was largely due to an excess of nitrogen over potash, and that the difficulty could be overcome by raising the proportion of potash in the soil. Whether other factors contribute to leaf-scorch in various crops, it is undoubtedly true that shortage of potash is not an uncommon one, and it is safe to state that the losses to growers due to leaf-scorch are much more serious than is generally supposed, for not only is the current crop affected, but those intricate chemical elaborations which can only take place in the leaf and on which the building up of the plant for the production of future crops depend, are also effectually handicapped.

It will thus be seen that a good case can be made out for the reasonable use of potassic manures and for the study of the potassic content of complete manures, in their relation to the soils on which they are to be used and the crops for which they are needed, when complete manures are preferred. The principal potash fertilisers available are kainit, potash manure salt, muriate of potash and sulphate of potash, but only the two last are suitable for application during the period of active growth and need be dealt with here. The practical difference between sulphate of potash and muriate of potash is that the carrier of potash in the former is a sulphate, while in the latter it is a chloride, and on some soils a chloride has the tendency to retard the growth of young plants; hence, although muriate of potash is cheaper—based on its unit value—sulphate of potash is generally preferred for horticultural crops grown under intensive conditions.

Some of the risks incurred in omitting to provide for an adequate supply of potash in any scheme of manuring have been shown, and where no application of kainit or potash manure salt has been made during the previous winter, and growers suspect a deficiency of potash in their soil, the deficiency can be made good by applying sulphate of potash now, at the rate of from one to two-and-a-half hundredweights per acre. Orchard trees generally, Gooseberries, Raspberries and Currants, need the heavier dressing, while the lighter dressing is beneficial to many vegetable crops, particularly Onions, Leeks, Parsnips, Turnips, Runner Beans and Celery. *W. Auton.*

HOME CORRESPONDENCE.

Gardeners' Pay and Status.—As a life-long horticulturist, I have been interested in the correspondence on the above subject. Personally, I think that a keen, hard-working gardener can usually obtain a reasonable wage for his services. I admit that gardeners' wages are generally low in comparison to the emoluments received by other workmen—bricklayers, carpenters, plumbers, etc.—employed by an owner of an estate, and I maintain that a gardener is worth as much as these. The note in your issue of April 27, p. 314, by *W. P. W.*, entitled "Gardeners' Pay and Agricultural Scholarships," opens up a very important and far-reaching subject, and I should be pleased to see a little more detail on the point. Agricultural wages are now fixed by law, and I do not think that they are, in many cases, over £2 per week; in a good many parts they are less, and I do not call this a living wage for a married man. I think I am right in stating that wages on fruit farms, market gardens, etc., are governed somewhat by the wages paid to farm hands, whose wages are, in turn, governed by the prices obtained by the farmer for his crops. The farmer states he cannot pay more because he does not get a good return for his crops, owing to foreign competition, freightage, etc., therefore the only practicable plan is to tax imported produce of this kind to such an extent that it could not be sold for less than that which is grown at home. *W. H. Clark.*

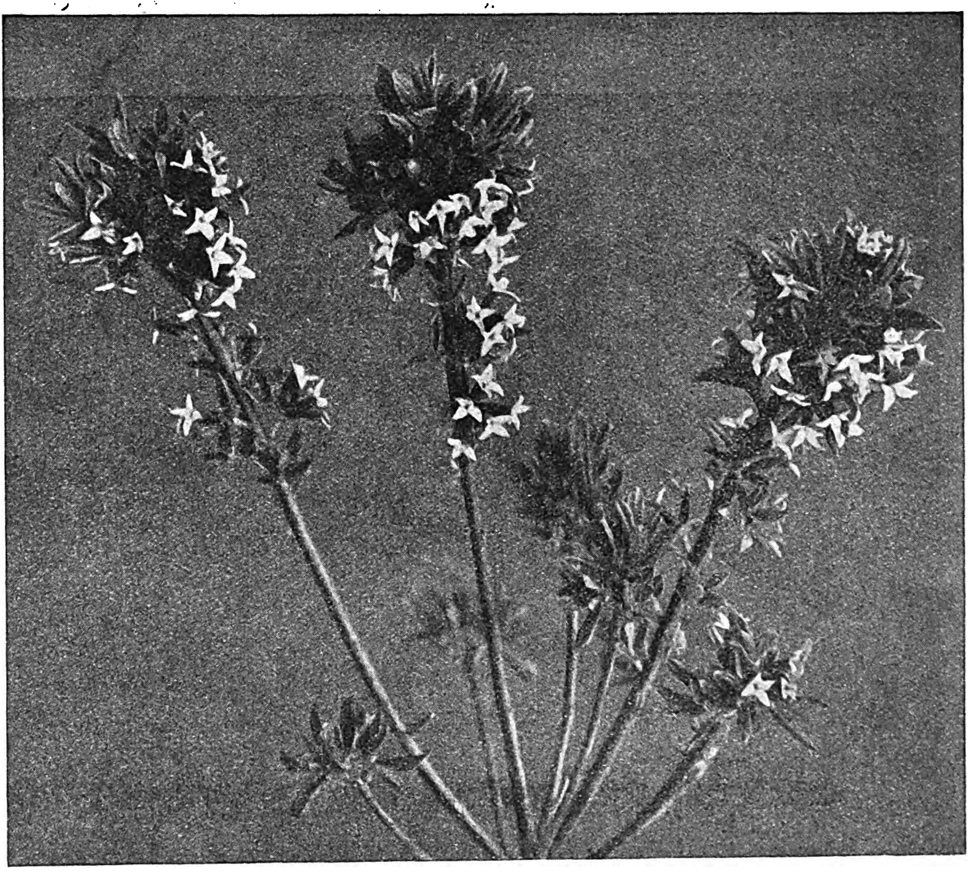

FIG. 206.—DAPHNE TANGUTICA.
R.H.S. Award of Merit, Chelsea Show, May 22. Flowers white and rose-purple.
Shown by Messrs. Bees, Ltd. (see p. 385.)

Rock Gardens at Chelsea.—In view of the correspondence and discussion during the past season on the rock gardens at Chelsea, perhaps an opinion, regarding several of this year's exhibits, by a "Fellow" who is nobody in particular, may be of interest. At Chelsea, last year, I was one of those who remarked, in connection with a certain exhibit, that those responsible for it "knew geology." Much has to be taken into account in judging a rock garden, but of this I am certain, the firm in question this year surpassed all previous efforts by creating a bit of "Nature" at Chelsea, and a pleasing, restful and harmonious bit of Nature at that. I refer to the work of Mr. Gavin Jones. Not only was it geologically correct, but artistry was well evidenced by restraint in the use of stone and plants and the balance of the whole. The only defect, to my mind, was that the lining of the near pool was too conspicuous; a matter difficult to overcome in a temporary construction. This rock garden went far to show that a minimum of large stones, well placed, is far more satisfactory than a great number of small stones. However perfectly placed, small stones give the impression of a "clatter" garden, rather than a rock garden. The exhibit which won the premier award I should have placed second. It was, I consider, very beautiful and natural, but there was a lack of restfulness, due partly to over-planting and, especially, to the rather large piece of rock just below the top on the extreme left; this latter sadly disturbed the balance of a beautiful lay-out, and could well have been omitted. Some years back Mr. Whitelegg put up some wonderful exhibits. Why does he now persist in the jumble of limestone blocks with intensive planting so unworthy of his capabilities? And why do exhibitors make a public parade of their gardens? So distracting and unnecessary, for plants can be seen far better on a show table, amid rocks if desired, in the tents. After all, is it not the purpose of the outdoor exhibits at Chelsea to display gardens as a whole? I should state that I do not know anybody even remotely connected with the various rock garden exhibitors at Chelsea. Finally, I must state that I, for one, was extremely appreciative of Mrs. A. Sherman Hoyt's intensely interesting Californian exhibit. *R. Painton.*

SOCIETIES.

CHELSEA SHOW.

(*Concluded from p.* 393).

Hardy Herbaceous Plants.

To the people who love hardy Primulas, the collection of these plants set up by Col. and Mrs. Kemmis, Lymington, Hants, was one of the most attractive features in the show. In the extensive variety there were Primulas helodoxa, hybrida Mrs. Kennis, Joey, japonica var. Miller's Crimson, japonica var. alba, burmanica, Asthore hybrids and others; truly a charming collection.

With the golden-yellow of Trollius Earliest of All, Commander-in-Chief, Orange Crest, Empire Day, His Majesty, Goldquelle, and varieties of Lupins prevailing, the display of hardy flowers made by Messrs. Harkness and Sons was very attractive. A collection of flowers from the Little Munden Nursery contained a mixture of Delphiniums, Tulips, Violas, Solomon's Seal and other flowers.

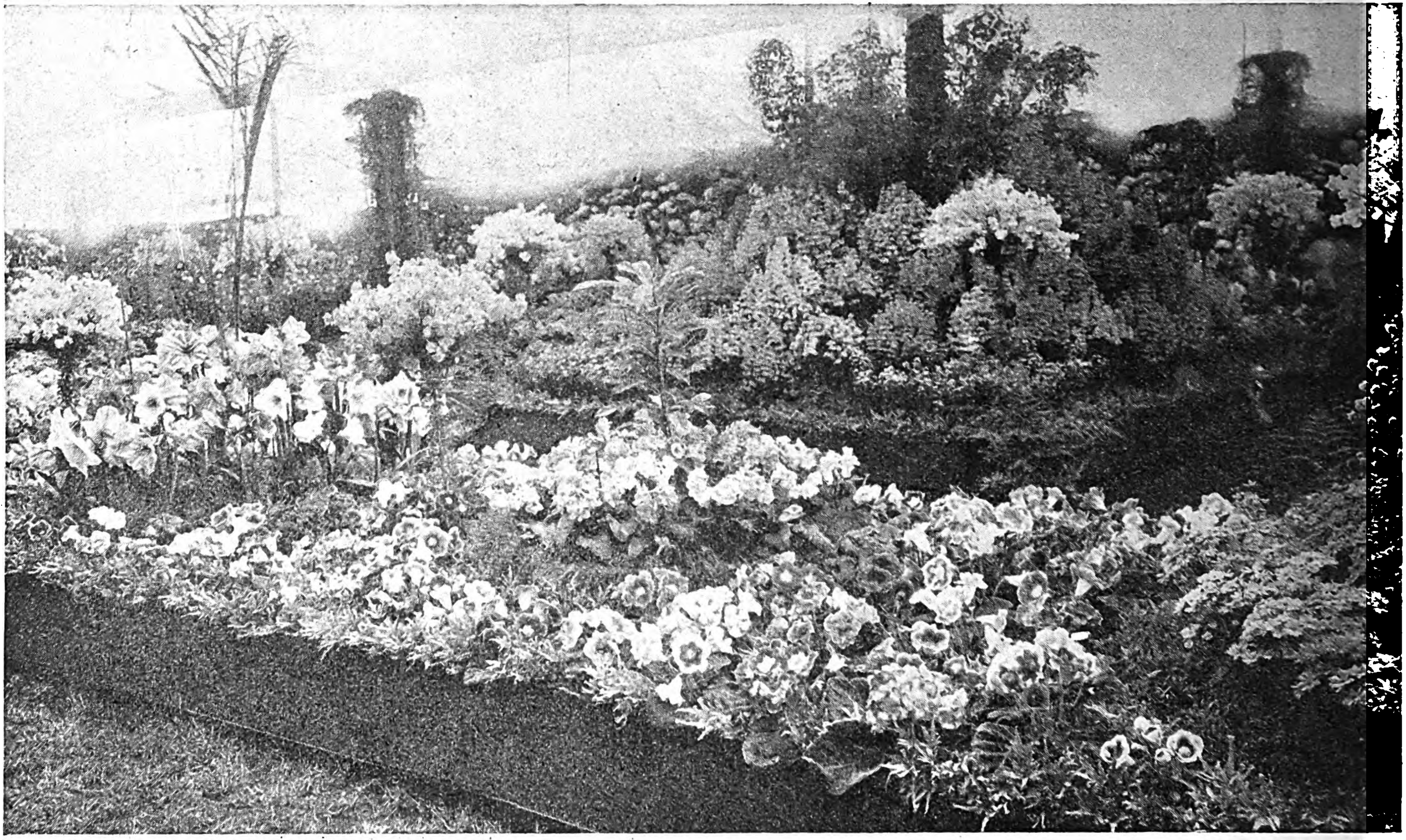

FIG. 207.—CHELSEA SHOW MESSRS. JAMES CARTER & CO.'S GOLD MEDAL EXHIBIT.

(see p. 386.)

Highly attractive on account of its free-flowering habit and deep lemon colour was the display of Primula Barrowley Gem shown by Mr. R. V. Roger. Quite unique was the group of Pentstemon heterophyllus var. True Blue, shown by Messrs. I. House and Son, who also showed Pink White Lady, Verbenas and other plants.

In one corner of the tent Messrs. Bakers made a fine display and the material used in the collection included tall Delphiniums, Lupins in variety, Campanulas, a number of named varieties of Trollius, a group of Lilium umbellatum, with Japanese Maples and Bamboos in the background. The effect of this display as a whole was very charming. The same firm also showed a group of Spiraeas, the different varieties showing various shades of rose and pink.

A mass of Lupins from Messrs. John Waterer, Sons and Crisp occupied a position of prominence near the entrance to one of the tents, and among the varieties represented were Delight, Iolanthe and Sunshine; Delphiniums, German Irises, Pyrethrums and Verbascum Cotswold Gem added an air of variety to this charming display of flowers.

With flowering specimens of the curious Beschorneria yuccoides at the back, as well as Embothrium coccineum, the Fire Tree, and Myostodium nobile, the Chatham Island Forget-me-not, Messrs. R. Gill and Son showed a fine and interesting collection of St. Brigid Anemones. The bank of Lupins from Mr. G. H. Dalrymple made an effective display and next to them the same firm set up a fine collection of hardy Primulas, in which Primula hybrida Sir George Thursby made an attractive centre piece. St. Brigid Anemones, Violas, Pansies and Papaver May Queen, which resented the heat of the tent, were the chief features in the exhibit from Mr. F. Rich.

An interesting group of hardy plants was artistically arranged by Messrs. B. Ladhams, Ltd., and the chief features it contained were Primula Sieboldii var. grandiflora and the pretty little double Myosotis Bijou. A very interesting group of hardy herbaceous flowers, with Water Lilies in bloom, in water, looking very natural with gold fish swimming among them, was shown by Mr. Amos Perry, and not the least interesting part of it were the Irises, Paeonies and Trollius giganteus.

Delphiniums in variety, Anchusas Pride of Dover and the Dropmore variety, Lupins, Aquilegias, Verbascum Gainsborough, and Geums were the chief features in the collection that was tastefully arranged by Messrs. W. Wood and Son. Lupins formed the background and Aubrietia Drayton the ground work of a small exhibit sent by Mr. G. R. Downer, Chichester.

Pyrethrums, both single and double in considerable variety, with Delphiniums, Paeonies and Lupins, comprised the flowers mostly used in the group set up by Messrs. J. Kelway and Son, with Gladioli Early Sunrise, Duke of Bedford and others in the centre, the whole making up a very charming display.

From Messrs. G. Gibson and Co there came an interesting collection in which an Iceland Poppy called Gibson's Giant Orange was a feature. Delphiniums were a feature in Mr. S. J. Goodliffe's collection of flowers, and at one corner of the group there was a well furnished rock garden. Paeonies alone made one group from Messrs. G. Bunyard and Co. and some very pleasing varieties were displayed, including Reine Hortense, Marie Jacquière, Arthur Claude Lorraine, Cingalle and many others. In a group staged by Messrs. G. and A. Clark there were masses of Trollius giganteus, Astilbe Granat, Doronicums, Irises in variety, Geums, Campanulas and Thalictrums. From the Maytham Gardens, Rolvendon, came a charming collection of Campanula persicifolia, and the Studley College sent a showy collection of Canterbury Bells.

Not the least attractive exhibit to be found in the tents was the wonderful display of Delphiniums from Messrs. Blackmore and Langdon, which not only demonstrated the development that has been made in the culture of these plants, but it represented the wide range of delicate colours provided in the many named varieties. It is, perhaps, safe to state that Messrs. Blackmore and Langdon never set up a finer early lot of Delphiniums.

Messrs. Hewitts also made a great show with Delphiniums, which were admired by al who saw them. The level of the flowers was so equal that there would be no point in selecting any of the varieties particularly for mention.

A well-arranged group of hardy plants arranged by Messrs. Bees, Ltd., contained masses of Campanula Telham Beauty, Trollius Excelsior and Earliest of All, Pyrethrum Firefly, Irises Hart Nibrig and Yellow Queen, with a mass of hybrid Aquilegias, Lilium umbellatum and Geum Fire Opal.

Delightfully attractive are applicable words to describe the exhibit of Messrs. Wilson and Agar, which was composed of Lupins in charming variety, Astilbe Rhineland, Campanula The Shirley and C. Verdun, and Verbascum Cotswold Queen, all displayed to advantage without any overcrowding.

Messrs. M. Prichard and Sons, Ltd., had a miscellaneous collection of hardy plants in which were included Erica australis, Eremurus himalaicus, Lupins in variety, Primulas japonica, Garnet, Red Japanese Blush, and Hew Dalrymple, Magnolia Lennei and Saxifraga pyramidalis. Lupin Downer's Delight was one of the most charming varieties displayed.

Plants of Special Interest.

As is usual at the Great Spring Show of the Society, a large number of plants were submitted to the two sections of the Floral Committee. The majority failed to receive recognition, and we imagine that most of the knowledgeable visitors were in agreement with the findings of the Committee as regards the average rejected plants, and would wonder why the owners of a few brought them to Chelsea. But among the plants which, no doubt for good and sufficient reason, did not receive award, there were some which possessed a certain garden value. Salvia Simmonsii, which was shown by Messrs. Chaplin Bros., and was stated to be a sport from the well-known S. Pride of Zurich, appears to be a very desirable variety of the scarlet S. splendens for cultivation in pots or for summer bedding. It is of dwarf, compact habit and bears large, brilliant flowers. Dianthus Sweet Wivelsfield is a graceful hybrid raised by Messrs. Allwood Bros. It is erect, branches freely, and two or three of the plants bore very attractive flowers. Trollius Golden Monarch, shown by Messrs. G. Gibson and Co., is a vigorous variety, well furnished with bright golden-yellow flowers. Mimulus Painted Lady, shown by Mr. Clarence Elliott, is one of the large-flowered Musks. It has creamy-white flowers with a bright crimson blotch and margined with velvety-crimson.

Cupressus obtusa tetragona minima was shown by Messrs. W. H. Rogers and Son, who claimed that it is the dwarfest Conifer; in addition to its exceeding dwarfness, it was a very compact and healthy specimen. Veronica austriaca, shown by Mr. T. Carlisle is a charming little herbaceous plant, about two inches in height, and bearing spikes of relatively large, bright blue flowers.

Rhododendrons and Azaleas.

Whether in the tents or out-of-doors, the massed groups of Rhododendrons and Azaleas were especially valuable in the wealth of glowing colour they supplied. The dry winter and spring have not been altogether favourable for these shrubs, and more particularly the evergreen Rhododendrons, but Messrs. Waterer, Sons and Crisp were able to set out two excellent groups of Rhododendrons, with an occasional specimen of a Japanese Maple, at the Embankment end of the large marquee. They had very large and profusely-flowered specimens of Bagshot Ruby, of brilliant colour; Starfish, a very beautiful light pink variety which has prominent stamens; Glory of Bagshot, a lovely white which retains the pink flushing of the buds on the outsides of the petals; Prince of Wales, light pink with deeper colour on the margins; Monstrous, a really immense truss of large flowers of fascinating pink shades; Britannia, vivid scarlet; Philip Waterer, a large flower of bright pink shading; Cynthia, deep pink, with cerise spots; Bernard Crisp, pink; Mother of Pearl, a delicate blush which becomes almost snow-white when fully open; Mars, a deep red; Ida Waterer, a bright crimson with waved margins; Saturne, cerise, shading to pink; Loder's White; Mrs. E. C. Stirling, which is still one of the best Rhododendrons of pink colouring, and the equally well-known Pink Pearl.

In association with their attractive groups of Liliums and other border plants, Messrs. Wallace and Co. showed a number of good Rhododendrons. The principal sorts were Pink Beauty, Doncaster, bright red; Mrs. R. W. Wallace, pale blush, freely spotted; Sappho, white, with chocolate spots; Admiral Piet Hein, blush-lilac; Duke of York, rosy-pink with brown spots; Corona, coral-pink shades; Barbara Wallace, rich pink with deeper shading on the margin; Pink Pearl and White Pearl. At one corner of the group they showed a few well-flowered Camellias.

A large corner in the marquee was filled with Rhododendrons by Messrs. Fred. Street. The varieties of bright colouring included Meteor, Mars, Bagshot Ruby, Prometheus and Corona, and they also had good examples of Pink Pearl, Mrs. E. C. Stirling and John Waterer.

In one of the corners of the marquee at the rock garden end, Mr. W. C. Slocock grouped many interesting Rhododendrons. His collection included some particularly good hybrids of R. discolor, R. campylocarpum and R. auriculatum. The outstanding named sorts were Professor Hugo de Vries, an immense flower of pink colour shaded with lilac; Goldsworth Pink, Cynthia, blush, and Langley Park, bright crimson. In the open, Mr. Slocock had another very good group of Rhododendrons, and in this the centre was filled with profusely-flowered bushes of Goldsworth Yellow. Professor Hugo de Vries was again well shown, as also were Alice, Mount Everest, Cynthia and Madame B. de Bruin, a bright red.

Many Rhododendrons, chiefly hardy hybrids, were staged by Messrs. R. Gill and Son, but they also had several plants of R. sino-grande to show its exceedingly luxuriant leaves. Their hybrids included Pink Pearl, Lady Ethel Hall, pink, with deeper shading at the margins; Betty Wormold, a large flower of pink shades; and Mrs. A. T. de la Mare, a good white.

In association with an interesting collection of uncommon plants, Lady Aberconway (gr. Mr. F. C. Puddle), Bodnant, North Wales, displayed some good Rhododendrons. The chief were R. Wiltonii, R. campylocarpum, R. callimorphum, R. oreotrephes and R. (Azalea) Vaseyi.

Deciduous Azaleas of great beauty were shown by Messrs. R. and G. Cuthbert in the marquee, and in the Main Avenue. Their exhibit in the marquee filled two goodly beds, and the outdoor collection was even more extensive. All the types and crosses were represented by the best sorts, and they were all of entrancing beauty. Among the mollis × sinensis were Brilliant, Dainty and Hugo Koster, of glowing colours, while the A. rustica varieties included A. Mecene and the double, blush-pink A. Ribiera. In addition to the many Azaleas the outdoor group contained a number of good Hydrangeas and Lilacs.

At the Hospital end of the marquee, Mr. George G. Whitelegg had a very attractive group of deciduous Azaleas. This included Dante, Gabriel Rosetti, pink and pale primrose; Mrs. George Whitelegg, yellow, flushed with red; Professor Lorentz, orange-red with yellow centre; Mutatuli, orange shades; Beethoven, salmon-orange; Samuel Taylor Coleridge and several very beautiful Kaempferi × malvatica seedlings.

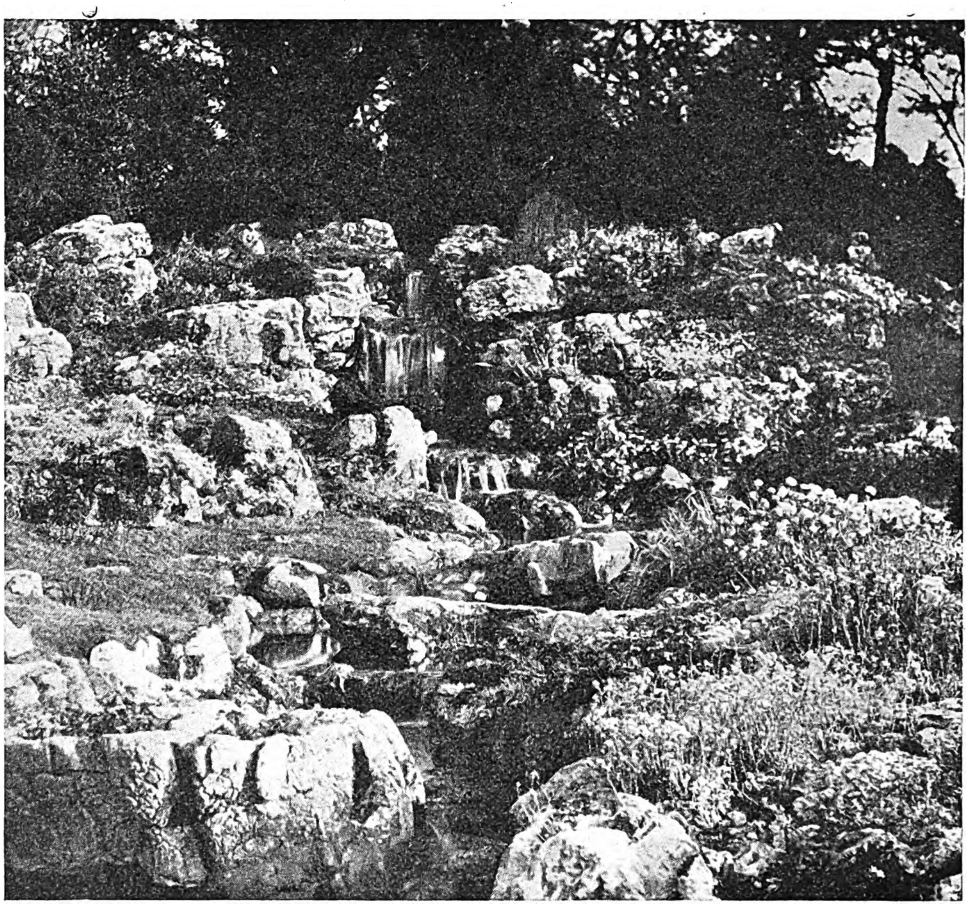

FIG. 208.—CHELSEA SHOW: MESSRS. PULHAM AND SON'S ROCK GARDEN

(see p. 386.)

Trees and Shrubs Out-of-Doors.

A very attractive finish to the rock gardens was made by the groups of miscellaneous shrubs which were arranged at the ends. By the small gate, Messrs. Hillier and Sons had a most fascinating display in association with their pleasant "Rivulet Garden." Large specimens of Japanese varieties of the double-flowered Cherries were freely used and with great effect. These floriferous bushes were chiefly varieties of Prunus serrulata and of P. Lannesiana. Many Brooms, Japanese Azaleas, and shapely Conifers were also well placed. On the bank of the rivulet there was a good example of the prostrate Salix herbacea, one of the most lovely trees in existence. Many Primulas, Astilbes, dwarf

Irises, Lychnis and other appropriate plants were given places on either side of the rivulet, while in the water were various Nymphaeas, Rushes and Reeds.

At the other end of the rock gardens, Messrs. Fletcher Bros. set out many good standard Brooms over shapely young Conifers. The latter included varieties of Cupressus, Thuya, Juniperus and Taxus, mostly of value for the rock garden.

A large collection of hardy trees and shrubs was well arranged by Messrs. A. Charlton and Sons. The chief flowering sorts were Brooms, Rhododendrons, Azaleas, Corokea virgata, Kalmia latifolia, Viburnum Carlesii and Laburnum Vossii, while colour was also provided by many shapely Japanese Maples. The Brooms were mostly standards of such varieties as Daisy Hill, Firefly, Dallimorei and Dorothy Walpole.

Another uncommonly good exhibit of hardy trees and shrubs was made by Messrs. Waterer, Sons and Crisp. In one large bed they showed many double-flowered Cherries, Lilacs, Brooms, Prunus japonica var. roseo pleno, Rhododendrons, Azaleas, Ledum palustre and Japanese Maples. A companion bed was filled chiefly with very healthy Conifers. Those of good yellow colouring were prominent and included Cupressus pisifera var. filifera aurea, Taxus Standishii, Taxus baccata var. nana aurea, and Cupressus obtusa var. Crippsii. There were also good examples of Abies concolor, Cedrus atlantica, Cedrus Deodara and many desirable varieties of Cupressus Lawsoniana.

A large, main bed with several smaller round beds were well filled with hardy trees and shrubs by Messrs. L. R. Russell, Ltd. The ornamental Vines were freely shown, and the chief sorts were Vitis heterophylla variegata, Vitis aestivalis, Vitis Ciotat, Vitis arborea, and Vitis Coignetiae. In one group there were many very fascinating bushy Wistarias in full bloom.

A very bright and attractive group was arranged by Messrs. Hewitts, Ltd., with many Laburnums, Brooms, Rhododendrons and Azaleas. The Rhododendrons included good specimens of Loder's White, Princess Mary of Cambridge, Snowball and R. fastuosum var. flore pleno.

Their customary extensive collection of Japanese Maples was set out most attractively by Messrs. W. Fromow and Sons. The many specimens were all grown splendidly and well illustrated the great charm and value of the diversity of foliage and colour of these shrubs. Those with most brilliant colours included Acer dissectum atropurpureum and A. palmatum atropurpureum sanguineum, while the delicate beauty of the pale green A. dissectum palmatifidum was a perfect foil to the vivid colours. Other good varieties which were so well shown included A. japonicum aureum, A. pictum album and A. dissectum ornatum.

A very effective group was made by Messrs. M. Prichard and Sons with various Brooms, Lilacs, Magnolias, Potentillas and other flowering shrubs in association with excellent Lupins, Geums, Primulas, Trollius, Tiarella cordifolia and other border flowers. A small round bed was filled by Messrs. Isaac House and Son, with the beautiful Pentstemon heterophyllus True Blue, edged with the deeper coloured Anagallis linifolia Willmoreana.

There were many very shapely topiary specimens, mostly in evergreen Box, and standard Bay trees of high quality. With their excellent "Cutbushes" Messrs. W. Cutbush and Son grouped large batches of Hydrangea Madame E. Moulliere, H. Viscomtesse de Vibray, H. Marechal Foch and H. Rubis. Messrs. Robert Green (1911), Ltd., had a very extensive exhibit of perfectly-trained topiary specimens, and also showed many stately Bay trees. Similar specimens were also set out by Messrs. Harrods, Ltd., and Mr. J. Klinkert had his customary large exhibit of topiary in many forms, mostly in Box, although a few were of Yew.

Trees and Shrubs under Canvas.

A large and very attractive group, solely of Clematis, was exhibited by Messrs. G. Jackman and Sons. This was composed of exceedingly well-grown plants bearing plenty of large flowers. The many varieties included Ville de Lyon, bright carmine-red; Marcel Moser, mauve, with a pink stripe; Duchess of Edinburgh, double, white; Comtesse de Bouchard, satiny rose, very free flowering; Belle of Woking, pale mauve; Beauty of Worcester, blue; Lasurstern, large, bright blue; Fairy Queen, pale flesh-pink; Miss Bateman, white, with chocolate filaments; Princess of Mauve, bluish-mauve; The President, plum shades; Lady Betty Balfour, velvety-purple; Lady Caroline Neville, white and mauve; Lady Northcliffe, deep blue; and the popular Nelly Moser.

At the Embankment end of the marquee an extensive and exceedingly attractive collection of trees and shrubs was arranged by Messrs. Hillier and Sons. As in their outdoor exhibit the beautiful flowering Cherries were well represented. They also had large bushes of the yellow Rosa Hugonis, many Hydrangeas, Pentapterygium serpens, and an interesting selection of the rarer Conifers, such as Taiwania cryptomerioides, Cunninghamia Konishii, C. sinensis, Pinus patula, P. Montezumae, P. Lindleyi and other Mexican Pines.

A large collection of the rarer trees and shrubs was set out by Mr. G. Reuthe. At the ends of this noteworthy exhibit he had exceptionally large specimens of Crinodendron Hookeri and Lomatia ferruginea, while in the centre there was a flower spike of Beschorneria yuccoides and another of Echium Wildpretii. There were also flowering branches of Cestrum coccineum and several of the best deciduous Magnolias. Rhododendrons were represented by large bushes of Pink Pearl, Hugo Koster, Aucklandii var. album and other desirable sorts.

In a corner of the marquee, a good collection of hardy shrubs was displayed by Mr. R. C. Notcutt, who had tall examples of Pyrus Scheideckeri, P. Lemoinei and other Pyruses, with some double-flowered Cherries, Brooms, Enkianthus campanulatus and, in Victor Lemoine, Belle de Nancy and Vauban, three good Lilacs. On the staging, Messrs. Robert Veitch and Son showed Lilacs Charles Joly, Jeanne d'Arc and Congo, with Magnolia cordata, Sollya Drummondii, Andromeda Rollinsonii, Metrosideros floridus, Illicium religiosum, Grevillea sulphurea and other half-hardy shrubs.

A very good collection of Brooms was shown by Messrs. William Watson and Sons. The outstanding varieties were Lord Lambourne, scarlet-crimson wings and creamy-primrose standards; Lady Moore, rich, fiery red wings and yellowish-buff standards; Hibernia, velvety-crimson wings and creamy-orange standards; Eblana, brick-red wings and crimson standards; Dorothy Walpole, velvety-crimson wings and rose standards; and many of the best of the older sorts. Messrs. Burkwood and Skipwith showed Brooms, Azaleas, Rhododendrons, Kalmias, Maples, Daphne caucasicum and Leptospermums. The Lye Green Nurseries had various Lilacs, Cherries, Maples and dwarf Conifers. A compact group of Crataegus, Ribes aureum, Rhododendrons, Azaleas, Veronicas and Rosemary was contributed by Messrs. Patricks. Mr. George E. P. Wood showed Brooms, Rhododendrons, Azaleas and other hardy shrubs.

On the tabling, Mr. C. Turner showed such good Lilacs as Souvenir de L. Späth, Le Galois, Marc Micheli, Senator Volland, Marie Legraye, Negro and Michael Buckner. Messrs. W. J. Brown also showed a good selection of Lilacs, with Heliotrope Lord Roberts, Tropaeolum Ball of Fire and Trollius Golden Queen. Messrs. D. Stewart and Son included, in a miscellaneous group, Kalmia latifolia, Japanese Azaleas, Genista praecox, Olearia stellata, several good Rhododendrons and Japanese Maples. In a large corner space, Messrs. J. Cheal and Sons grouped large specimens of the varieties Mary, Frieda, Gerda and Auguste of Japanese Azaleas, with various Brooms, Rhododendrons, Viburnum Carlesii, Kalmia latifolia, Cytisus Andreanus, C. Golden Sunlight, C. kewensis and C. purpureus var. pendula.

A very complete collection of dwarfed Japanese trees was staged by the Yokohama Nursery Co. Many of the specimens were evidently of great age, yet all were in perfect health and possessed considerable beauty of form. The oldest examples were of Cupressus obtusa, although the Wistarias, which were bearing long racemes of flowers, the Maples, Pines and Larches, were quite ancient.

The Leptospermums were very prominent in the interesting group of the Donard Nursery Co., who had profusely flowered bushes of L. Nichollii, L. scoparium and L. Chapmannii, and also included heavily-fruited bushes of Pernettya Bell's Seedling. Interesting shrubs were also shown by Mr. W. J. Marchant and Messrs. Hollamby's Nurseries.

Miscellaneous Plants.

A large circular group of exceedingly well-grown Dahlias was arranged by Messrs. Carter Page and Co. Here they displayed full-grown pot plants of nearly all the different types of the autumn flower. Cut blooms of various Dahlias were shown by Messrs. E. F. Fairbairn and Sons.

An extensive collection of especially good Auriculas was staged by Mr. James Douglas. The alpine varieties, which have decided garden value, predominated, but the show and fancy varieties were also well represented.

Violas and Pansies were equally well shown by Mr. William Yandell, who had many trays of blooms of distinct varieties kept fresh in moist sand. Mr. G. Zambra also exhibited Viola cornuta seedlings. A small collection of greenhouse Fuchsias was set up by Mr. H. A. Brown. Mr. R. J. Case had trusses of many useful Zonal Pelargoniums, and Mr. T. M. Endean set out a fascinating collection of Cacti, mostly as small pot plants, although there were some large Mammillarias. An attractive little rock garden on the tabling was made and planted by Messrs. Casburn and Welch.

The Scientific Tent.

The large tent which contained the more recent contributions to the science of horticulture received its full quota of interested and inquiring visitors throughout the three days of the show. In most instances there were representatives of the various establishments ready and willing to help the enquiring visitor.

The East Malling Research Station had four ten-year-old Apple trees which had been lifted carefully so as to show every possible root intact and in its natural direction. The four trees were on different root-stocks and had been grown on the Bagshot sands at Wisley. The chief object of the exhibit was to illustrate how great an influence the stock has on the vigour and spread of the fruit tree and, according to the nature of the root-stock the same variety (Lane's Prince Albert in this case) may be made very vigorous, vigorous, semi-dwarf or very dwarf. The exhibit taught other lessons, particularly that the spread of the roots is considerably in excess of that of the branches, and that the root system is composed of a scaffolding of main branches from which other roots descend almost vertically, and that from these, fibrous roots ramify in all directions.

The Seale-Hayne Agricultural College had an interesting exhibit concerning various diseases and pests of bulbs, and the chief were Narcissus flies, Narcissus eelworm, Narcissus leaf-spot and Tulip basal rot.

The Rothamsted Experimental Station's exhibit was in three sections, (1) Plant Diseases; (2) the Insecticidal Properties of Plant Extracts; (3) the Activities of the Useful Micro-organisms concerned in (a) the inoculation of Leguminous plants, and (b) the manufacture of artificial farmyard manure. The last-named showed that a fair substitute for farmyard manure may be obtained by the proper use of such materials as garden refuse, bracken and straw.

The Cheshunt Experimental Station showed specimens of injurious gall midges, particularly those which affect the Pear and the edible Pea; various diseases and pests of certain greenhouse plants, such as red spider and white fly on Tomatos, the leaf-miner of Chrysanthemums, and the mosaic disease of Aucubas.

The chief exhibits of the R.H.S. were "Insect Pests of New Garden Plants," showing how they may be combated; diagrams illustrating the effects of the length of day period of illumination upon growth; the eelworm disease of Narcissus and methods of control; fungus diseases of various garden plants, trees and shrubs; the "Determinations of groups of Plant Pigments"; specimens of manures and fertilisers in common use; and eight coloured drawings of Bearded Irises, illustrating the colour classification of this race of Irises. The Society's Information Bureau, where representatives were prepared to throw light upon the Fellows' troubles and problems, was again well patronised.

The Director of Kew sent herbarium specimens of plants from the Balkan Peninsula—a phytogeographical study; and from the Edinburgh Botanic Garden were sent many excellent new and interesting photographs of Scottish arctic alpine plants in their natural habitats, and also many photographs of new garden plants of more than usual interest.

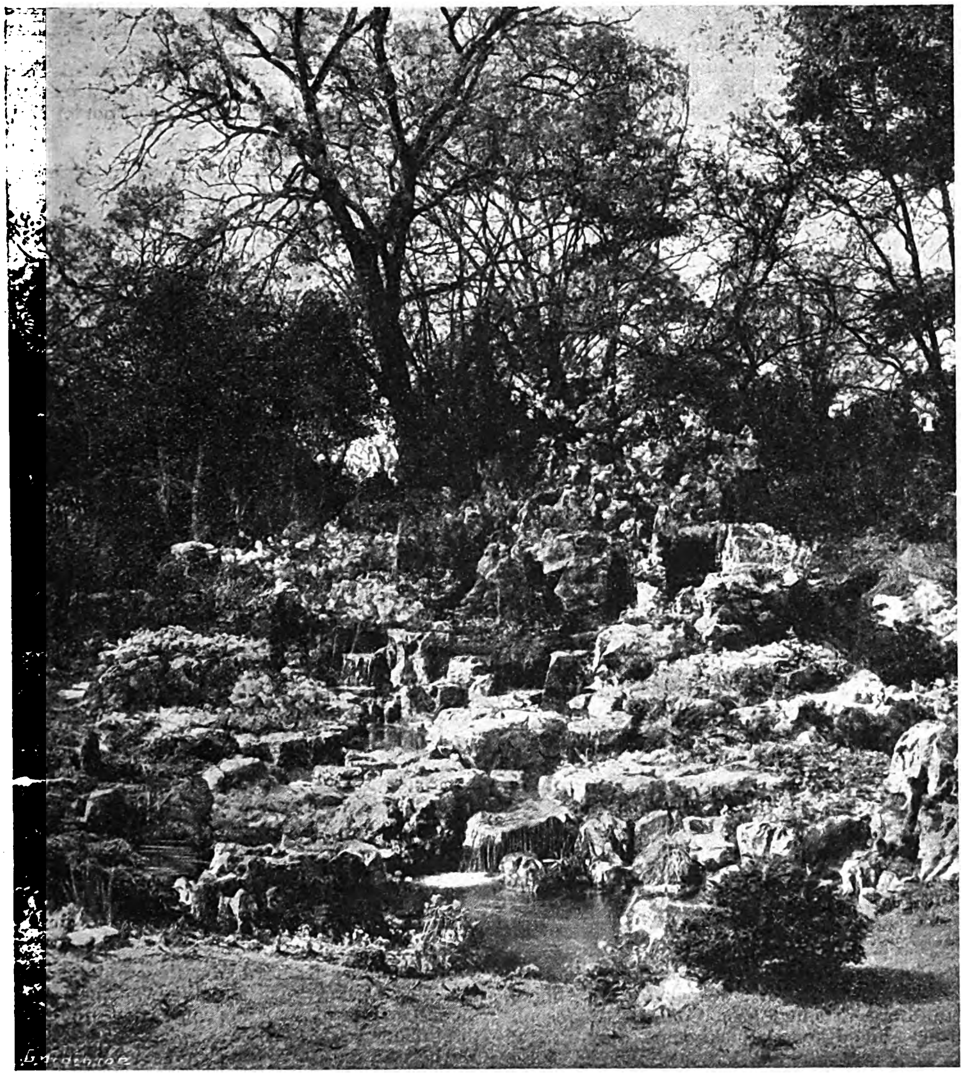

FIG. 209.—CHELSEA SHOW: MR. G. G. WHITELEGG'S ROCK GARDEN.

(see p. 386.)

The Art Tent.

On the lawn a large tent was devoted to paintings of flowers and garden scenes, to photographs and garden plans. To our mind, these were a very mixed assembly. A few were very good, more were moderately good, and others were, well, not so good. We are well aware that the critic of anything designated as art treads a path set densely with thorns, and we seem to have heard something to the effect that "Art is Long and Life is Short." Even now a spirited controversy is being waged in some of our contemporaries as to the artistic merits or otherwise of a certain work in stone. According to some, it seems that a work of this kind which may offend the artistic eye of a section to-day is certain to become the quintessence of things artistic in the near future. The conclusions we draw are that a painting which we to-day consider a daub may be an expression of the highest art in the eyes of a future generation. All this is as may be, but for the moment we prefer to remain old-fashioned and refuse to admire any painting or drawing of garden *genre* when we fail to recognise the subject of at least one of its component parts. When this happens, as it did quite a number of times at Chelsea, we class the paintings as daubs, and regret that the R.H.S. could not devise some system of selection so that, perhaps, fewer paintings, but of real merit should have adequate space for our enjoyment of their beauty.

According to the official catalogue of the show there were over forty exhibits in the Art Tent. Like that given to some of the artists, our space is very limited, so that we can mention only a few of the exhibits which pleased us most of all, and beg those exhibitors who may not be mentioned not to assume that theirs were the paintings which we consider should have been placed elsewhere, for in a number of instances this would be very far from correct.

Last year, when in California, Miss Winifred Walker made many most faithful paintings of native flowers, and her collection was given the Society's Silver-gilt Medal. We are glad to know that, later, we shall have an opportunity of further examining the paintings. For the present we were content to greatly admire the large Spanish pot of various flowers, including Bougainvilleas and Hibiscuses, grown in the gardens of California. Other paintings which delighted us were the truss of Rhododendron, the bowl of rich red Roses, an old-fashioned jug of June flowers, another of cottage-garden flowers, and the bowl of Pansies. Miss Juliet Williams caught and fixed the delicate charm of the elusive Salpiglossis in one of her paintings and had another of the early yellow Jasminum. Miss E. S. Ough had a number of very faithful studies of garden flowers, especially of Roses, Polyanthuses, Oriental Poppies and of gardens. Miss A. F. Wilkinson's gardens also were, to us, real living gardens. The forecourt gardens of Mrs. Russell Walker were pleasant, desirable places. Miss Ethel Willis was especially successful with the single-stemmed Croton and a bowl of Anemone japonica, and Miss E. Savory caught the charm of the stellata Cinerarias and the solid beauty of mixed Zinnias.

There were many woodland scenes, and of these we liked Miss Warrington's Daffodils under the spreading Beech trees and her Rhododendrons by the water-side; and Miss Pilkington's beautiful woodland and her flower borders. Mrs. E. A. Andrews painted life-like Delphiniums, Sweet Williams and Cydonias, and the garden flowers of Mrs. E. Fisher and of Miss Lilian Archer were worthy of more than a passing glance. There were not many studies of still life, but Mr. Leonard Philpot and Miss M. Angell were very successful with their fruit, and the latter also had a charming spray of Lilac. Miss W. M. A. Brook had many valuable paintings and drawings of injurious insects and their hosts.

Garden Sundries.

There seemed to be a greatly increased number of horticultural sundries. On the present occasion these filled the whole of the Sundries Avenue, the available portion of the Main Avenue, Monument Road and spread over a deal of the lawn.

Except for the revolving glasshouse, the glass houses, garden frames and the all-important heating apparatus, were erected in Monument Road. Owing, we understand, to lack of space, the exhibits of garden boilers and piping were not so extensive as usual. Messrs. C. P. Kinnell and Co. had their powerful Bisson and Rochford boilers in brick settings, and also showed their horseshoe and other patterns which are suitable for medium-sized and smaller structures. An interesting novelty to many visitors was their equipment for converting any type of greenhouse boiler into an oil fire to consume a heavy, crude oil. This is of automatic nature and the thermostat controls the flow of oil to the burners.

Messrs. Kinnell and Co. also showed their well-known garden hose and their Norwich valves. The Thames Bank Iron Co. showed boilers well set in brick.

There was a great variety of glasshouses. Messrs. Duncan Tucker, Ltd., had a good range of their glasshouses in Teak-wood, with attendant frames and an attractive garden house. Messrs. Boulton and Paul erected a greenhouse of pleasing design, complete with boiler and piping and frames, and also had a revolving garden shelter. The Battle Steel Window Co. showed a greenhouse and frame and also iron fences and gates. Messrs. James Gray, Ltd., set up a workmanlike greenhouse with heating apparatus and lath blinds. The well-designed greenhouses of Messrs. Messenger and Co. were also fitted with lath blinds, and their Loughborough boiler. A greenhouse, frames and garden furniture, were displayed by Messrs. A. Overend and Sons. Messrs. Skinner, Board and Co. erected one of their wire-tension glasshouses. Messrs. David Swain and Co. had a fine selection of well-designed houses complete with boilers and pipes and also showed garden frames and furniture. Messrs. J. Weeks and Co. had their well-known patterns with heating apparatus and wood lath blinds. Messrs. Wm. Wood and Sons also showed good greenhouses. The greenhouse novelty in Monument Road was the concrete glasshouse erected by Messrs. C. Rawson and Co., which is of pleasing appearance. Except that the glass is set in lead rabbets packed with asbestos, the structure is of concrete and, it is claimed, everlasting.

In the Sundries Avenue several well-known horticultural sundriesmen had very attractive kiosks where they set out a considerable variety of goods. Messrs. G. H. **Richards, Ltd.**, displayed their well-known Xl All preparations, Kamforite, fumigating Shreds, Worm-killer, Vitalizer manure and many more preparations. Messrs. **Corry and Co.** made attractive displays with their Niquas, Weed Death, Lethorion Cones, Summer Cloud, Extract of Quassia, and the old favourite Gishurst Compound. White Fly Compound was given a prominent place by Messrs. **Abol, Ltd.**, who also showed their well-known syringes, Neuspray, White Fly Compound and Weed-killer.

Two large kiosks were filled by Messrs. **George Monro, Ltd.** In one they had the Simar Rototiller and the Monotrac Motor Cultivator, while in the other they displayed almost every possible garden aid in necessity. Messrs. **Murphy and Son** had a good range of fungicides and insecticides. Messrs. **Wakeley Bros. and Co.** had a very attractive stand where they set out samples of their well-known Hop Manure and many other preparations.

The value of the Shoulder Hoe was demonstrated by Mr. **John Hampson**, who showed its easy working and labour-saving qualities. The various accessories fascinated many interested visitors. The **Acme Chemical** Co. showed weed-killers, worm-killers, lawn sand and various insecticides and fertilisers. Messrs. J. **Fison and** Co. had their fish and other manures, with worm and weed-killers.

The **Chase Continuous Cloche** was set out in goodly lengths over various seedling plants. Mr. J. **Haw** had many of his useful watering-cans and garden engines. Messrs. **Prentice Bros., Ltd.**, had attractive tins and cartons of Tomorite and other fertilisers. **Walker's Fruit Tree Protectors** contained fully-grown trees, and they also showed tennis netting. Chief among the many cutting implements was the Rolcut Secateur, which was shown by Mr. B. J. **Walker**, who also had several useful cultivating tools.

Spraying machines were shown in great variety by the **Four Oaks Spraying Co.**, who had their large orchard pattern and knapsack sprayers; Mr. E. H. **Hill**; the **Holder Harriden Co., Ltd.**; Messrs. **Robinson Bros, Ltd.**, who also had watering-cans and fertilisers; and Mr. A. S. **Sedgwick**, who showed his handy little greenhouse sprayer.

There were plenty of lawn-mowers on view, and these included the speedy and powerful motor-driven machines as well as those for horse-power and manual labour. Messrs. **Dennis Bros.** had their special patterns. Messrs. T. **Green and Son** had a great range of motor, horse and hand patterns. The **Godiva Engineering** Co. included lawn markers with their mowers; the easy-running J. P. Super Lawn-mowers were shown in several patterns; the well-known **Atco** pattern was on view in a large stand; Messrs. **Ransomes, Sims and Jefferies** were busy demonstrating the values of their various mowers, as also were Messrs. A. **Shanks and** Co. with their well-known designs.

The chief exhibitors of garden furniture, ornaments and other materials were Messrs. **Abbott Bros.**; the **Acme Patent Ladder** Co., **Castles' Shipbreaking** Co., Messrs. **Drew, Clark and** Co., the **Dryad Works**, Messrs. A. W. **Gamage and** Co., who also showed hammocks and small tents; Messrs. **Robert Green, Ltd.**, Messrs. **Gilliam and** Co., Messrs. **Harrods, Ltd.**, Messrs. **Burton, Holt, Ltd.**, Messrs. **Hughes, Bolckow and** Co., Messrs. R. A. **Lister and** Co, who had attractive plant tubs, Messrs. A. H. **Moorton, Ltd.**, **New Cross Timber** Co., Messrs. **Piggott Bros. and** Co., the **Papworth Industries**, Messrs. **Plant Bros.**, Messrs. **Pulham and Son**, Mr W. T. **Revitt**, Messrs. **Sanders and** Co., Mr. H. C. **Slingsby**, Messrs. **Wakeley Bros. and** Co., and Mr. C. **White**.

Horticultural publications were exhibited extensively and *The Gardeners' Chronicle* kiosk was a rendezvous for many of its readers.

NATIONAL TULIP.

The Annual Show of this Society was held under the auspices of the Royal Horticultural Society, at the Chelsea Flower Show, on May 23 and 24. It was tucked away in a small section of a tent, the exhibits lining about half the wall space, so that there was ample room for the visitors desirous of ascertaining the abilities of this Society to stage a show. In the Royal Horticultural Society's old hall at Vincent Square, it would have been comfortably housed in an annexe; at Chelsea it was swamped and insignificant.

As to the exhibitors, there were six, chief among them, and sharing the honours, being Sir A. **Daniel Hall**, Merton; Mr. W. **Peters**, Cambridge; Mr. C. W. **Needham**, Hale; Mr. **Peter** R. **Barr**, and Mr. A. E. **Amos**, Colchester; these would appear to be the National Tulip Society.

There were ten classes in all. Sir **Daniel Hall** was first in the premier class, for twelve dissimilar rectified Tulips, two feathered and two flamed, with good specimen blooms of and Sir Joseph Paxton, Sir **Daniel Hall** was first for three flamed Tulips; Mr. W. **Peters**, being placed second; Sir **Daniel Hall** was also first for six dissimilar breeder Tulips, with Dorothy Ann, rich red, with a white base; Ducalion, Mary Swan, Lucy Luard, Romeo and Mars, orange-scarlet, yellow at the base, awarded a special prize as the premier Breeder in the show. Mr. P. R. **Barr** was second in this class, and Mr. C. W. **Needham**, third.

Sir **Daniel** was also first for three dissimilar breeder Tulips, with Daphne, Cyrano and Gloriana; Mr. P. R. **Barr** was second, showing Annie McGregor, Adonis and Goldfinder.

Mr. C. W. **Needham** secured the "Samuel Barlow" prize for the best pair of rectified Tulips, one feathered and one flamed, with good blooms of Sir Joseph Paxton and Mrs. Atkin, Sir **Daniel Hall** and Mr. **Peter** R. **Barr**, being second and third respectively.

In the class for six dissimilar rectified Tulips, Mr. A. E. **Amos**, was first with good examples of Duchess of Sutherland Stockport, Mabel, Lucy Luard, Julietta and Britomart, outstanding; Samuel Barlow, Garibaldi, Daphne, Mabel, Lord Stanley, Mrs. Collier, Sir Joseph Paxton and Rhoda Backhouse. Mr. **Peter** R. **Barr** was second, his best blooms being of George Hayward, a grand old favourite, adjudged the best feathered Tulip exhibited; Wedding Coat, James Wilde, a good feathered Bizarre; Duchess of Sutherland, and Mabel. Mr. W. **Peters**, Cambridge, was third, his collection including the premier flamed Tulip shown, a grand bloom of Sam Barlow; Mr. C. W. **Needham** was fourth.

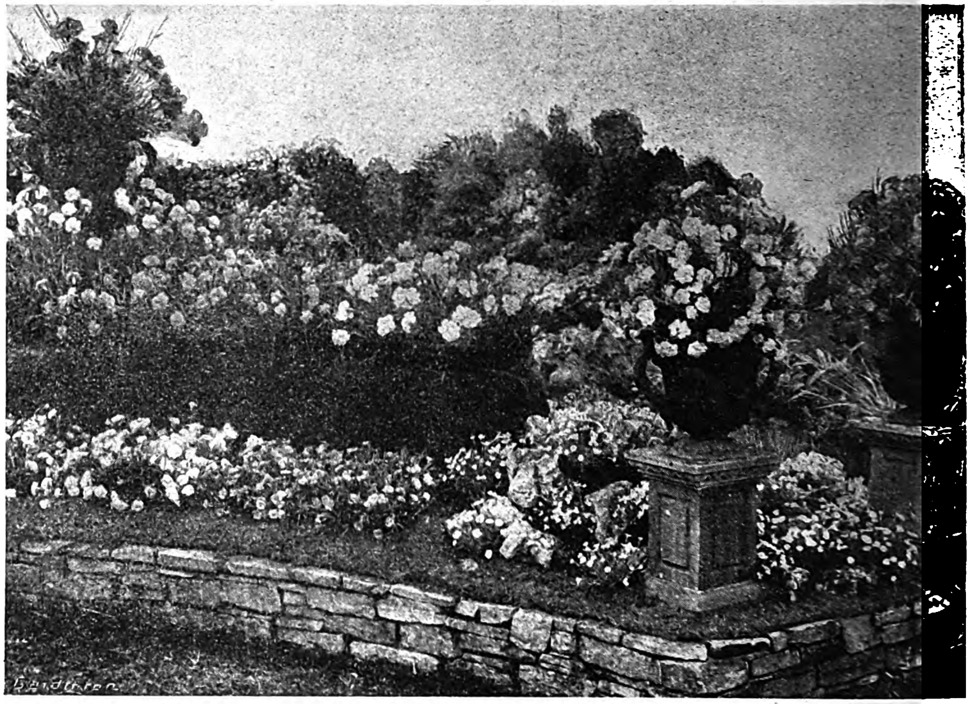

FIG. 210.—CHELSEA SHOW: MESSRS. ALLWOOD BROS.' CARNATIONS AND HYBRID PINKS.

(see p. 388.)

In Class B, for six dissimilar rectified Tulips, one feathered and one flamed of each, Mr. C. W. **Needham** was first; Sir **Daniel Hall**, second; Mr. P. R. **Barr**, third, and Mr. W. **Peters**, fourth. Mr. **Needham's** six blooms were of Mrs. Collier, George Edward, Sir Joseph Paxton, Annie McGregor, Attraction and Bessie.

Mr. C. W. **Needham** was also first for three feathered Tulips, one of each class, his specimen blooms being of William Anniball, yellow, feathered red; Clio, white, with purplish-red feathering; and Annie McGregor, white, feathered red. Mr. W. **Peters** was second, with examples of Jane, Bessie and Robin; and Sir **Daniel Hall** was third.

With good blooms of Cecilia, George Edward Kate Connor, Richard Headley and Adelheit; Mr. E. **Chater**, East Finchley, being placed second. Mr. **Amos** was also first for three dissimilar breeder Tulips, with Adonis, Lord Derby and James Wilde; and for two rectified Tulips, with Lucy Luard and Annie McGregor.

Messrs. **Barr and Sons** had two small exhibits of various old-English Tulips, including some attractive flamed and feathered sorts.

ROYAL CALEDONIAN HORTICULTURAL.

At the monthly meeting of this Society, held at Edinburgh early in May, Mr. J. T. Jeffrey presiding, Sir Everard im Thurn delivered a lecture on "Orchid Collecting by an Amateur." He described his journeyings in British Guiana as far inland as Mount Roraima, which he pictured as the Eldorado of some botanists. The microscopic Orchids which he collected were botanical curiosities, found growing on the branches of trees in swamps and forests where all manner of plants were to be found. Incidentally, he mentioned that Cattleya superba was one of the Orchids of commerce in that country, it being collected by the natives and taken down to the coast and sold.

In the competition for the best Schizanthus, the first prize was awarded to Mr. Bernard McWeeney, Old Farm, Colinton, for a well-grown plant measuring six feet in height, five feet in diameter, and sixteen feet in circumference. Mr. J. A. Sword, Inveralmond, was second, with a fine hybrid of his own raising. Mr. Neil Leyden, Midfield, Lasswade, was successful in the class for two vases of Darwin Tulips, while a Cultural Certificate was awarded to a group of Gardenias exhibited by the City Parks Department, and to a seedling Carnation of a pleasing pink colour, raised by Mr. John Smith, Balgray Gardens, Lockerbie. A vase of Narcissus Red Beacon was exhibited by Messrs. Dickson and Co., and a Camellia was shown by Mr. Morrison, 2, Goff Avenue, Leith, both of whom received votes of thanks.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of this Society was held in the Royal Horticultural Society's Hall, on Monday, early in May, Mr. Charles H. Curtis presiding.

Two new members were elected. Three members withdrew the sum of £21 15s. 1d. from their deposit accounts, and the sum of £132 1s. 0d. was passed for payment to the nominees of four deceased members. The sick-pay for the month on the Ordinary side amounted to £111 11s. 6d., and in the State section to £82 19s. 6d. The sum of £28 7s. 0d. was paid in grants to ten members for dental and optical treatment, and several other cases were considered.

Obituary.

Dr. Trabut.—We regret to learn of the death in Algeria, on April 23, of Dr. Trabut, Director of the Algerian Botanical Service. He was also corresponding member of the French Agricultural Academy and Academy of Science. In 1880, Dr. Trabut was appointed Professor of Natural History at the mixed school of Medicine and Pharmacy in Algiers, and immediately, with his colleague and friend, M. Battendier, set about making an exhaustive study of the Algerian flora. This work completed, he proceeded greatly to enrich the economic flora by judicious introductions and hybridisation, and to his enterprise is due the credit for endowing Algerian agriculture with many new forage plants, cereals, Cottons, valuable fruit trees and other subjects. He worked untiringly to overcome the local prejudice against the introduction of certain fruits which have since proved of great economic value, and succeeded in winning the esteem and admiration of all in the colony. His funeral was attended by the Governor of Algeria and many other notable persons, and it is generally felt that it will be long before his place can be adequately filled.

TRADE NOTE.

The older gardeners will remember the Sproughton hoe, invented by the Rev. A. Foster Mellior—of Rose fame—but gardeners of a later generation may not be familar with its virtues. The Sproughton hoe possesses all the good qualities of the Dutch hoe, with two distinct advantages over that useful soil-tiller; it cuts both ways, fore and aft, so that weeds are never pushed into the soil by it; and as it has a crank-shaped neck, it is entirely open on one side and therefore may be worked quite close up to and around Roses and other plants, consequently it is additionally effective. The larger-sized form has also a knife-shaped point which further increases its value as a weapon of offence against weeds. For surface tillage the larger size will serve for the wider garden spaces, while the smaller will prove satisfactory in the rock garden and among seedlings. Each has a shaft into which a wooden handle may be thrust, as in the case of other hoes, rakes, etc., but we have found the small size extremely useful without this addition, when working in a small but closely-planted area. Messrs. F. Davidson and Co., 143-149, Great Portland Street, are offering these hoes, and also a new type of spud for eradicating fruit tree and Rose suckers; and a weather glass of the old-fashioned Dutch "tea-pot" type, which, when properly supplied with water, gives early indication of weather changes.

ANSWERS TO CORRESPONDENTS.

Cyclamens Failing.—*E. M.* The Cyclamen corm and roots were infested with parasitic eelworms. The soil in which your plants are growing should be sterilised with steam at 180°F. for three hours. For sterilising the small quantity required for your purpose, the pots and soil should be stood on bricks in a copper with sufficient water to cover the bricks. Prolonged baking of the soil in an oven will kill eelworms, but the effect on the soil is less satisfactory.

Cyclamens Attacked by Thrips.—*Bath.* The Cyclamen foliage sent shows the typical symptom of an attack by thrips. Affected plants should be dipped in a Nicotine-soap wash. Daily forceful syringings with clear water will tend to reduce the attack. Fumigation with Nicotine vapour is less efficient for this pest than hydrocyanic acid gas.

Indian Azaleas.—*A. H. R.* The many varieties of Indian Azaleas are best repotted when they have finished flowering and are starting into fresh growth. The compost should consist of good fibrous peat, with enough sand added to keep the whole open and porous; this will depend on the amount of sand originally in the peat. Firm potting is essential. After repotting, the plants require to be kept close and moist, in an average temperature of 55°, spraying several times a day during bright weather, the object being to encourage growth and root action. As the season advances and growth is completed they should be gradually given more air, to harden the growths preparatory to standing them out-of-doors towards the end of June, or even earlier, if growth is completed, the pots being partially plunged in a bed of ashes, which serves the double purpose of conserving the root moisture and preventing the plants blowing over. They should be housed again about the middle of September.

Names of Plants.—*T. J. S.* Cerasus James H. Veitch of nurseries; Prunus serrulata var. Fugenzo, of Japan. *Surrey.* 1, The Narcissus is a Barrii variety, but we cannot undertake to name florists' flowers; 2, Spiraea Thunbergii.—*F. B.* Evidently a garden variety of the St. Brigid type of Anemone. *S. P. S.* A form of Prunus persica.—*P. D.* 1, Pteris tremula; 2, Adiantum cuneatum; 3, Pteris cretica var. major; 4, Asparagus crispus (flexuosa); 5, Pteris serrulata var. cristata; 6, Ophiopogon Jaburan; 7, Asplenium bulbiferum; 8, Linaria Cymbalaria var. variegata.

Tomato and Melon Plants.—*G. S.* The Tomato plants are free from infection by pathogenic organisms, but are affected with "blindness." The stock from which the seeds were obtained has deteriorated. In such cases, a certain percentage of the plants do not produce flower trusses. All plants showing "blindness" should be burnt. The stem of the Melon plant submitted did not afford sufficient material from which to make a diagnosis of the trouble. Send a whole plant.

Tulips Diseased.—*P. C. C.* and *P. P.* The Tulips are infected with "fire," due to Botrytis tulipae. Collect and burn all infected foliage and lift all bulbs after flowering, discarding all those which show any signs of rot and those with black sclerotia on the outside of the bulb. Do not replant in infected soil for at least two years. Protect the plants from cold winds and late spring frosts.

Communications Received. — J. C.—G. N.—A. O.—A. E.—A. D. H.—J. S. M.—J. C.—T. P—A. J.—S. A.—A. D.—A. C. B.—F. H. W.—A. B.—F. W. T.—G. W.

NEW HORTICULTURAL INVENTIONS.

These particulars of New Patents, of interest to readers, have been selected from the *Official Journal of Patents*, and are published by permission of the Controller of H.M. Stationery Office.

Latest Patent Applications.

14,116.—Bloch (Nee Kahn), E.—Manufacture of artificial manure. May 6.

14,614.—Bryce, A. C.—Agricultural implements. May 10.

14,102.—Rasmussen, R. A.—Single-share weeding, etc., machines. May 6.

14,551.—Robertson, J. W.—Device for cutting edges of lawns, etc. May 9.

14,585.—Roche, J. J.—Spacing-machine for sowing seeds. May 10.

Specifications Published.

286,220.—Meyer, L., and Meyer, F. (trading as Chemische Fabrik L. Meyer).—Dry disinfectant for seeds.

284,671.—Engelhardt, E.—Hothouses, greenhouses, conservatories, and the like.

310,627.—Richardson, C. D.—Means for supporting and training plants in pots.

310,647.—Edkins, W. J.—Means for fastening growing plants to supporting wires, strings, stakes and the like.

310,732.—Weber, O.—Means for fastening stems of trees to stakes.

Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C., at the uniform price of 1s. each.

Abstract Published.

A new powder fertiliser with the unfailing base of slaked lime has been patented by a German inventor, Mr. F. Boerner, of 69, Hofchenstrasse, Breslau, Grmany, under No. 308,328. Three parts of dry ground slaked lime are intimately mixed with one part of finely ground and calcined infusorial silica or of silicic acid powder, either the silica before mixing, or the resultant mixture, being saturated first with formaldehyde solution and, after drying, with carbon bisulphide. Saturation may be effected by sprinkling devices carried by an endless travelling band. The strength of the formaldehyde solution may be forty per cent. by volume. The preparation may be dusted on to seeds of corn or vegetables, or may be mixed with three or four times its weight of screened house or street refuse to produce, after storage, a combined fertilising and vermin and disease destroying agent. Compost heaps may be treated for the destruction of parasites.

THE LATEST TRADE MARKS.

This list of Trade Marks, of interest to readers, has been selected from the Official *Trade Marks Journal*, and is published by permission of the Controller of H.M. Stationery Office.

METDURO.

500,751.—Chemical substances used for agricultural and horticultural purposes.—Metropole Developments, Limited, Metropole House, Finsbury Square, London, E.C.2. May 15.

FARPINE.

501,544.—Chemical substances used for agricultural and horticultural purposes.—The Farinol Company, Limited, "Farinol House," Trafford Park, Manchester. May 15.

AGROL.

499,142.—Chemical substances used for horticultural purposes.—Albert Richard James Davenport, 93, Jerningham Road, New Cross, London, S.E.14. May 8.

MURCOTINE.

500,531.—Chemical substances used for agricultural and horticultural purposes.—Murphy and Sons, Ltd., Wheathampstead House, Wheathampstead, Hertfordshire. May 8.

MARKETS.

COVENT GARDEN, Tuesday, May 28, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Acacia Drummondii, per doz.	24 0	30 0
—armata, per doz.	24 0	30 0
Adiantum cuneatum, per doz.	10 0	12 0
—elegans	10 0	12 0
Aralia Sieboldii	8 0	9 0
Araucarias, per doz.	30 0	40 0
Asparagus plumosus	12 0	18 0
—Sprengeri	12 0	18 0
Aspidistras, green	16 0	60 0
Aspleniums, doz.	12 0	18 0
—32's	24 0	30 0
—nidus	12 0	15 0
Cacti, per tray, 12's. 15's	5 0	7 0
Cinerarias, per doz.	21 0	24 0
Crotons, per doz.	30 0	45 0
Cyrtomiums	10 0	12 0
Erica persoluta, per doz.	24 0	36 0

	s. d.	s. d.
Heliotropes, per doz.	15 0	18 0
Hydrangeas, white, per doz.	24 0	30 0
—pink and blue, per doz.	24 0	36 0
Marguerites, white, per doz.	16 0	21 0
Mignonette, per doz.	18 0	24 0
Nephrolepis in variety	12 0	18 0
—32's	24 0	36 0
Palms, Kentia,	30 0	48 0
—60's	15 0	18 0
Primula malacoides, 60's, per doz.	7 0	8 0
Pteris in variety	10 0	15 0
—large, 60's	5 0	6 0
—small „	4 0	5 0
—72's, per tray of 15	2 6	3 0
Genistas, per doz.	18 0	21 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	9 0	10 0
—cuneatum, per doz. bun.	5 0	6 0
Anemone St Brigid, per doz.	3 0	5 0
Arums (Richardias), per doz. blooms	3 0	4 0
Asparagus plumosus, per bun., long trails	2 6	3 0
—med. sprays	2 0	2 6
—short „	0 9	1 0
—Sprengeri, bun. long sprays	2 0	2 6
—med. „	1 6	2 6
—short „	1 0	1 3
Carnations, per doz. blooms	2 0	5 0
Cornflower, blue, per doz. bun.	4 6	6 0
—pink, per doz. bun.	5 0	6 0
Croton leaves, per doz.	1 9	2 6
Delphinium, blue, per doz. spikes	5 0	6 0
Ferns, French, per doz. bun.	10 0	12 0
Forget-me-nots, per doz. bun.	6 0	9 0
Gladiolus, Blushing Bride, per doz. bun.	15 0	18 0
—The Bride, per doz. bun.	15 0	18 0
—Peach Blossom, per doz. bun.	15 0	18 0
—Scarlet, per doz. spikes	4 0	5 0
—Primulinus, per doz. spikes	4 0	4 6
Gypsophila elegans, white, per doz. bun.	4 0	9 0
Heather, white, per doz. bun.	9 0	12 0
Iceland Poppies, per doz. bun.	3 0	4 0
Iris, Spanish, blue, per doz. blooms	1 3	1 6
— — white, per doz. blooms	1 3	1 6
— — yellow, per doz. blooms	1 6	2 0
— — mauve	1 3	1 6

	s. d.	s. d.
Lilium longiflorum, long, per bun.	2 0	2 6
— — short, per doz. blooms	2 0	2 6
—speciosum rubrum, long, per doz.	4 0	5 0
— — — short, per doz.	2 6	3 0
Lily-of-the-Valley, per doz. bun.	18 0	30 0
Marigolds, per doz. bun.	3 0	5 0
Myrtle, green, per doz. bun.	1 6	2 6
Narcissus, double white, per doz. bun.	4 0	6 0
—Poeticus, per doz. bun.	1 6	2 0
Nigella, blue, per doz. bun.	9 0	12 0
Orchids, per doz.		
—Cattleyas	18 0	30 0
Paeonies, red, 6's, per doz. bun.	4 0	5 0
Pinks, white, per doz. bun.	3 0	4 0
Pyrethrum, single red, per doz. bun.	6 0	8 0
—single pink, per doz. bun.	6 0	8 0
—double pink, per doz. bun.	8 0	9 0
Roses, per doz. blooms—		
—Columbia	3 0	4 0
—Richmond	2 6	3 6
—Yellow	2 6	3 6
—Molly Crawford	2 6	3 0
—Butterfly	2 6	3 6
Smilax, per doz. trails	5 0	6 0
Statice, mauve, per doz. bun.	4 0	5 0
—Suworowii, per doz. bun.	9 0	12 0
Stock, double white, per doz. bun.	9 0	12 0
—double pink, per doz.	12 0	15 0
Sweet Peas, various, per doz. bun.	6 0	24 0
Tulips, Darwins, pink, doz. bun.	9 0	12 0
— — yellow, per doz. bun.	9 0	12 0

Remarks.—Owing to the improved weather conditions, supplies of cut flowers have become considerably more plentiful, and prices are mostly on the down grade. Tulips are now finishing, also Narcissus poeticus. Double white Narcissi have been arriving from all sources in excellent condition. Coloured Pyrethrums made their first appearance last week-end, while Cornflowers, Delphiniums, Paeonies and Gladioli should become more plentiful during this week. Many boxes of Spanish Irises had been affected by warm weather when they were offered for sale. Sweet Peas are in the best condition received this season, some of the blooms being exceptionally fine in quality, and prices range from 6d. to 2s. 6d. per bunch. Gypsophila elegans and Statice Suworowii are now arriving from home-growers in good condition. Carnations and Roses are again on the down grade, also Lilium longiflorum. Several boxes of yellow Arums (Richardias) have been on sale during the past week. More Stephanotis and Gardenias have been on offer, also outdoor Lily-of-the-Valley. In the foliage department, Smilax has returned to a more normal price. Supplies of Asparagus plumosus and A. Sprengeri exceed present requirements. Maidenhair Fern continues somewhat limited in quantity.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples—		
—New Zealand—		
—Delicious	14 0	17 0
—Jonathan	14 0	17 0
—Worcester		
—Dunn's	13 0	15 0
—Australian—		
—Delicious	14 0	15 0
—Cleos	15 0	16 0
—Dunn's	13 0	15 0
—Tasmanian—		
—Cox's	14 0	16 0
—Jonathan	12 0	13 0
—Cleos	13 0	14 0
Bananas, per bun.	12 0	21 0
Gooseberries, English, per lb.	0 6	0 8
Grapes, English—		
—Hambro, per lb.	3 0	5 0
—Cape—		
—Waltham Cross	10 0	18 0
Cherries, French, per boat	5 0	6 0
Apricots—		
—Spanish	10 0	15 0
Figs	4 0	15 0

	s. d.	s. d.
Pears—		
—New Zealand—		
—Winter Nelis, per tray	5 0	7 0
—Josephine	5 0	7 0
—Winter Cole	4 0	6 0
—Australian—		
—Winter Nelis	7 0	8 0
—Josephine	7 0	8 0
—Keiffers	15 0	16 0
—Peckham's Triumph, per tray	10 0	12 0
Grapes, Cape—		
—Henab Turki	12 0	20 0
—Australian—		
—Ohaney	15 0	16 0
Grape Fruits—		
—Jamaica	25 0	32 6
Lemons, per case—		
—Messina	10 0	12 6
Nectarines, per doz.	12 0	36 0
Oranges—		
—Denia	20 0	50 0
—Mercia	20 0	50 0
Peaches, per dozen	8 0	30 0
Pineapples, case	21 0	36 0
Strawberries, per lb.	4 0	10 0

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Asparagus—		
—Devon	2 6	3 0
—Evesham	1 6	3 0
—Giant	6 0	12 0
—Lauris	9 0	1 0
—Cavillon	0 8	0 9
Beans—		
—Worthing, finest, per lb.	0 9	1 0
—Guernsey	0 9	1 0
—Madiera	0 9	1 0
Beet, per bag	4 0	6 0
Cabbage, Spring, crates, 24's-30's	4 0	8 0
Carrots, French, per doz. bun.	4 0	9 0
Cauliflowers, Cornish, crates, 18's and 24's	8 0	10 0
Chicory, Belgian	0 3	0 4
Cucumbers, per flat	14 0	20 0
Endive, French, per crate, 18's and 24's	7 0	9 0
Lettuce, Cabbage—		
—English, per dozen	2 0	4 0
—French, indoor, 48's and 60's	6 0	8 0
—outdoor, 24's	4 0	7 6
Mint, per doz. bun.	2 0	3 0

	s. d.	s. d.
Mushrooms—		
—cups, per lb.	1 3	2 0
Boilers	0 9	1 3
Parsnips, per cwt.	5 0	6 0
Peas, French, per bag	4 0	6 0
—English, per lb.	1 0	1 6
—Guernsey, per lb.	1 0	1 6
Potatos—		
—English, cwt.	4 0	6 0
—Jersey, per lb.	0 2	0 2½
—Spanish, per cwt.	14 0	16 0
—Canary Islands, per case	10 0	12 0
—Azores, per case	10 0	15 0
—Scilly, per lb.	0 2	0 2½
Rhubarb—		
—natural, per doz.	2 6	3 0
Savoys, per doz.	2 0	3 6
Tomatos, Canary Islands, per bundle	20 0	25 0
—English—		
—pink	10 6	11 6
—pink and white	10 6	11 6
—white	9 0	10 0
—blue	9 0	10 0
—Guernsey	10 0	12 0
Turnips, French, per doz. bun.	8 0	10 0

Remarks.— Trade in Covent Garden has, on the whole, been good, the position being largely influenced by the fine weather. There has been an improved demand for Grapes, Strawberries and Melons, which constitute the leading lines of the choice fruit department. Grapes from South Africa and the Argentine are selling well, although prices are inclined to be easier. France is sending supplies of Cherries and Strawberries which are selling fairly well, and some Apricots are arriving from Spain. Pears from Australia and New Zealand are in keen demand at firm prices, and there is quite a good tone ruling in the Australian Apple market. Oranges, Lemons and Grape Fruits are all favourably affected by the warm weather, and are moving out freely. After a period of severe depression, the market for English Asparagus has shown some recovery, and prices have improved slightly. Tomato supplies are rather below requirements and they remain a firm trade; Cucumbers also are selling well at values higher than recent levels. Forced Beans are more plentiful from all sources, and although values have declined, they may still be considered favourable to the producer. Some English Gooseberries from the west of England are arriving and meeting a good market. Hothouse Peas are being enquired for; some English produce is selling well, in spite of comparatively large arrivals from the south of France. New Potatos from Spain are selling well, although prices are rather low, which also affects values of new Potatos from Jersey and Guernsey. Mushrooms are abundant and cheaper. Salads are a firm trade and Lettuces, in particular, are making good prices. Green vegetables and old Potatos are not selling very freely.

GLASGOW.

The excessive heat of the past week had an injurious effect on all cut blooms from the south and as the supplies were beyond the purchasing power of the trade, prices declined sharply to the lowest levels of the spring flowering season. Tulips were badly affected by the weather and Clara Butt, Bartigon and Baronne Tonnaye were only worth 1d. to 3d. per bunch of 12's. A considerable proportion of the Rose blooms were either soft or blown and ranged from 1s. to 2s. per dozen, while Carnations, which suffered less in transit, sold at 1s. to 2s. 6d., with specials at 3s. Pheasant Eye Narcissi ranged from ½d. to 1½d. per bunch; Irises, 10d. to 1s. 6d. per dozen; Anemones, 2s. to 6s.; Arums and Lilium longiflorum, 2s. to 2s. 6d.; Lily-of-the-Valley (outside grown), 4d. to 6d.; and Sweet Peas, 4d. to 10d., special 1s. 6d.

The principal movements in the fruit market were as follows:—Grapes, English Black Hamburg, 3s. 6d. per lb.; South African, black, 17s. per box; white, 12s. to 16s.; Pineapples, 3s. 6d. to 4s. each; New Zealand Apples (Jonathan), 16s. per case; Pears, 6s. per tray. Oranges and Grape Fruits were steady at former quotations.

In the vegetable section, Scotch Tomatos made 1s. 5d. per lb.; Guernsey, 13s. to 14s. per 12 lb. package; Asparagus, 2s. 6d. to 3s. per bundle for English, and 1s. for French; Cucumbers, 7s. per dozen; Lettuces, 8s. (Dutch, 30's); Cauliflowers, 6s.; and Mushrooms, 2s. 6d. per lb.

SCHEDULES RECEIVED.

Colchester Rose and Horticultural Society.—Summer Show, in The Castle Park, Colchester, on Wednesday, June 26, 1929.—Secretary, Mr. A. E. Warner, 60, Head Street, Colchester.

Peterborough Agricultural Society. — Summer Show, on the Show Ground, Peterborough, on Tuesday, Wednesday and Thursday, July 2, 3 and 4, 1929.—Secretary, Mr. Robert Bibby, Agricultural Offices, Cross Street, Peterborough.

Liverpool Horticultural Association.—Summer Show, at the Corn Market, Brunswick Street, Liverpool, on Wednesday and Thursday, July 17 and 18, 1929.—Secretary, Mr. W. D. Skinner, Brooklands, Waterloo Park, Waterloo.

Cheltenham Chamber of Commerce.—Cheltenham Spa Floral Fete in Montpellier Gardens, on Wednesday and Thursday, June 19 and 20, 1929.—Secretary, Mr. Cyril Cassidy, 58, High Street, Cheltenham.

The British Delphinium Society.—First Summer Show, at the Royal Horticultural Society's New Hall, on Friday. July 5, 1929.—Secretary, Mr. S. Halford Roberts, 3, Warwick Road, Thornton Heath, Surrey.

Birmingham Horticultural Society.—Floral Fete and Exhibition, in Handsworth Park, on Friday and Saturday, July 19 and 20, 1929.—Secretary, Mr. L. W. Webster, The Oaklands, 130, Albert, Road, Stechford, Birmingham.

Watford and Home Counties Horticultural Society.—Annual Summer Show, at Cassiobury Park, Watford, on Tuesday and Wednesday, July 23 and 24, 1929.—Secretary, Mr. A. J. Copeland, 132, High Street, Watford.

Hemel Hempstead Horticultural Society.—Summer Show, in The Bury Meadow, on Saturday, August 17, 1929.—Secretary, Mr. E. Edwards, Bargrove Gardens, Boxmoor.

Charfield Fete and Flower Show.—At Charfield, on Saturday, August 17, 1929.—Secretary, Mr. S. Benson, F.R.H.S., The Nursery, Charfield.

British Gladiolus Society.—National Exhibition, at the Royal Horticultural Society's Hall, on Tuesday, August 13, 1929. International Exhibition at Southport, on Wednesday, Thursday and Friday, August 28, 29 and 30, 1929.—Secretary, Mr. A. E. Amos, 10, Bergholt Road, Colchester.

Derby Horticultural Association.—Chrysanthemum Show, in the Royal Drill Hall, on Thursday, Friday and Saturday, November 7, 8 and 9, 1929.—Secretary, Mr. W. Wardman, 5, St. Augustine Street, Derby.

Buxton and District Chrysanthemum Society.—Twenty-fourth Annual Exhibition, in the Pavilion Gardens, Buxton, on Wednesday, November 13, 1929.—Secretary, Mr. A. Nevill, Thornwood Cottage, Carlisle Road, Buxton.

Gainsborough Chrysanthemum Society.—Thirty-second Annual Exhibition, in the Town Hall, Gainsborough, on Wednesday and Thursday, November 13 and 14, 1929.—Secretaries, Mr. H. L. Rowntree, Windy Ridge, Hawthorne Avenue, Gainsborough, and Mr. T. E. Henson, 27, Forster Street, Gainsborough.

GARDENING APPOINTMENT.

Mr. George William Hill, for the past two months gardener to Mrs. Allfrey, Farley Castle, near Reading, and previously for two-and-a-half years Inside Foreman at Sherfield Manor, Basingstoke, as gardener to Lieut.-Col. Thomas Brocklehurst Phillips, O.B.E., J.P., at Cherry Hinton Hall, Cambridge. [Thanks for 2s. for R.G.O.F. Box.—Eds.].

THE
Gardeners' Chronicle
No. 2215.—*SATURDAY, JUNE* 8, 1929.

CONTENTS.

Alpine garden—
  Anthemis Cupaniana 422
  Pentstemon Davidsonii 422
  Saxifraga Wallacei 422
  Vittadinia triloba... 422
Arthropodium cirrhatum 423
Cherries, importation of 416
Hardy flower border—
  Violas 422
  Zauschneria californica var. mexicana 422
Indoor plants—
  Combretum purpureum 421
  Clerodendron Thomsonae 421
Iris, the future of the... 428
Irises, collecting ... 425
Irises of the Bruno type... 427
Irises, tall bearded, for the specialist ... 427
Iris, two early-flowering 427
King's birthday honours 415
Magnolia conspicua, a fine old 429
Nursery notes—
  Messrs. Barr & Sons 431
Ourisia macrocarpa ... 421
Petherbridge, Mr. F. R. 416
Plant-life of the Balkan Peninsula 424
Primula, the genus ... 428
Rose trees, marking of imported ... 415
Royal Horticultural Society's Examinations 430
Royal Horticultural Society's Fruit Committee, the history of the 415
Scottish Forestry Commissioners, difficulties of the 429
Societies—
  Gardeners' Club ... 432
  General Bulb Growers' of Haarlem ... 433
  Guildford and District 432
  Manchester and North of England Orchid 432
  Royal Horticultural 433
Trees and shrubs—
  Cherries, flowering... 420
  Escallonias ... 420
  Fendlera rupicola ... 420
  Rhododendron Aucklandii 420
Tulip species, the breaking of... ... 423
Week's work, the ... 418
White fly, destruction of greenhouse, by parasites 417

ILLUSTRATIONS.

Arthropodium cirrhatum... 423
Iris cretica... 426
Iris mellita (pumila) from Ahlem Dagh... 424
Iris pumila from Macedonia 425
Magnolia conspicua 429
Narcissus Triplex 417
Ourisia macrocarpa 421
Petherbridge, Mr. F. R., ... 416
Rhododendron Aucklandii at Bryngarw 419

COLOURED SUPPLEMENT PLATE.
Iris Bruno.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58·4°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, June 5, 10 a.m. (Greenwich time). Bar. 29.8. Temp. 54°. Weather, dull and cool.

The History of the R.H.S. Fruit Committee.

THE Committees of the Royal Horticultural Society charged with the duty of valuing the exhibits placed before the Society are now so well established that it will come as a surprise to many to know that some fifty years elapsed before the Council found itself unable to continue this work and delegated the task to bodies of specialists. In the early days of the Society, fruits and vegetables held a much more commanding position than they now do; these were the days of the utilitarian philosophers. The first "meetings" we read of were dinners, and the dates were specially chosen so that the dessert might be representative of the best that horticulture could provide. As the Society grew in numbers, breakfasts were substituted at the famous Chiswick and Kensington shows. It was not until the year 1858 that the proposal of a special Fruit Committee came to fruition, and at the Anniversary Meeting in May of that year, Dr. Lindley read a report, in which occurs the following: "It is therefore proposed at once to form a Committee for the examination of all new fruits; another may perhaps be charged with deciding the merits of florists' flowers, and so on." The first meeting of the Fruit Committee took place on November 6 of the same year, and it is interesting to read the names of the first members: Chairman, Rev. L. V. Harcourt; Deputy Chairman, Mr. Charles Edmonds; Secretary, Mr. Robert Thompson; Messrs. Hy. Bailey, H. G. Bohn, M. Busby, Rev. A. Clive, John Clutton, J. Duncan, G. Fleming, R. G. Foggo, James Forbes, J. Fraser, J. B. Clegg, A. Henderson, R. Hogg, Thos. Ingram, John Lee, J. D. Llewellyn, Thomas Moore, Robert Osborne, Thomas Rivers, R. Smith, R. Sneyd, Lewis Solomon, John Spencer, C. W. Strickland, T. Taylor, W. Tillery, G. Tillyard, James Veitch, junr., and J. B. Whiting. It will be seen that many members were nurserymen famous in their day, and among the amateurs we note Mr. H. G. Bohn, the famous bookseller and publisher, one of the pioneers of the cheap classics. A great many of the names are those of members of the British Pomological Society which was established in 1854 under the Presidency of Sir Joseph Paxton, and of which Robert Hogg was one of the Secretaries. The new Fruit Committee was probably inspired by the older Pomological Society, which continued to meet until 1860, when, apparently, it came to an end. Mr. E. A. Bunyard has a copy of the *Proceedings*, which previously belonged to Robert Hogg, but they cease at 1860. The objects of the Fruit Committee were laid down by the Council as follows:—"The objects to which the attention of the Fruit Committee of the Horticultural Society will be principally directed are these:—(1), To encourage the production of new and improved varieties of fruits and vegetables, by examining and reporting on such as may be submitted to them for the purpose; (2), to collect and disseminate reliable information respecting the adaptability of particular kinds of fruits to the varied conditions of soil, locality, etc. throughout the United Kingdom, by means of a series of inquiries and examinations hereinafter to be defined." Since its establishment, the Fruit Committee has been mainly occupied in reporting upon new fruits and recommending awards to exhibits, but it has initiated enquiries into the subjects named in section two of its reference and the publication of *A Selected List of Hardy Fruits* was due to its efforts. In looking back on the eminent men who have occupied the chair and vice chair, we see that from 1866 Mr. G. F. Wilson, of Wisley fame, and Mr. A. Smee, F.R.S., and Mr. H. Webb, of Redhill, worthily filled these posts; Mr. Smee is remembered by his popular book *My Garden*. From 1880 and onwards, Sir Harry Veitch, Mr. John Lee, Mr. F. T. Rivers, Dr. Hogg, and Mr. Philip Crowley, and from 1900, Mr. George Bunyard, V.M.H., and Mr. C. G. A. Nix, V.M.H., occupied the chair with general approval. The relations of the Fruit Committee with the Council have been, it seems, mainly of a cordial nature, although present members will remember one instance in which temperatures rose slightly above the normal, but the cause of offence was quickly removed and amity resumed her wonted place. Of the vast numbers of new fruits which have passed before the Committee, how many have fulfilled their youthful promise? A glance at the list of awards enables a very rough answer to be given to this question and against those few lost or forgotten "First Class" Certificated varieties can be set many of outstanding merit which survive to this day. The great number of first-class fruits which came from the houses of Rivers, Laxton and others were in most cases recognised at once for what they were. Did the Committee, we wonder, realise that when they saw a large cooking Apple on December 6, 1876, from Mr. Merryweather, and awarded it a "Highly Commended" Certificate, that they were acknowledging in the now well-known Bramley's Seedling a cooking Apple which in fifty years would be among the most popular of English fruits? One function which the Committee has undertaken, namely, the identification of fruits, has always been performed under great difficulties. Pressure of time, and lack of reference books or specimens, has very seriously handicapped the execution of this always difficult task. It is still not generally realised that for accurate naming of fruit all the available facts must be considered. The age of the tree, the foliage, and conditions of growth, are necessary as well as the fruit, which is only one of the factors. Thanks to the recent provision of a fruit room in the new hall, the presence of a herbarium now in process of formation, and a collection of works of reference for their special use, the Fruit Committee should now be able to undertake this onerous duty under better conditions. It rests with the enquirers to see that their side of the contract, namely, full provision of data and adequate specimens, is adequately fulfilled. It is a peculiar privilege of members of the Royal Horticultural Society that they can obtain without cost the opinion of the best-known experts, and among those who give so generously of their knowledge the members of the Fruit Committee are specially notable. No other Committee stays on after its normal business to name specimens in anything like so large an amount, and for this work alone the Fruit Committee should obtain a very special measure of gratitude from all interested in horticulture.

Our Coloured Supplement Plate.—As Irises will be claiming the interest of many of our readers during the next week or so, we have pleasure in presenting with this issue a reproduction, in colour, of the beautiful Iris Bruno, which is dealt with at length under the heading "Irises of the Bruno Type," on p. 427. The blooms depicted were exhibited by Mr. G. L. Pilkington at last year's Iris Show.

The King's Birthday Honours.—The list of rewards for public services conferred by His Majesty the King on the occasion of his sixty-fourth birthday contains few names of special interest to horticulturists and agriculturists. Sir Robert A. Sanders, Minister of Agriculture and Fisheries in 1922-24, becomes a Baron. The Zoological Society's Gardens at Regent's Park have always been noted for their good gardening as well as for the fine collection of animals, therefore we are glad to find that Mr. Peter Chalmers Mitchell, Secretary of the Society, becomes a Knight. Mr. Ernest William Davy, Assistant Director of Agriculture, Nyassaland Protectorate, receives the M.B.E., and Mr. John C. F. Fryer, well-known for his research work at the Pathological Laboratory, Harpenden, receives the distinction of O.B.E., while Mr. Francis J. Plyman, Director of Agriculture, Central Provinces, India, becomes a Companion of the Order of the Indian Empire.

Captain F. Kingdon Ward.—No further news has been received regarding Captain F. Kingdon Ward, who is seriously ill at Moung-Sing, in western Tonkin. Mrs. Ward proposes to leave London by air mail for Karachi, on Saturday, June 8, *en route* for Moung-Sing, to nurse her husband, to whom medical assistance has been despatched from the Shan States.

The Marking of Imported Rose Trees.—Under an Order in Council, and in pursuance of Section 7 of the Merchandise Marks Act, 1926, it shall not be lawful to sell or expose for sale in the United Kingdom any imported Rose trees unless they bear an indication of origin. The indication of origin shall be legibly and durably marked in a conspicuous manner, either:—(1) on a metal or wooden label securely attached by wire or other metal fastening to the collar of each Rose tree, or (2) on a metal band clasped around the collar of each Rose tree. "The provisions of this Order shall not extend to Rose stocks. This Order shall apply on exposure for sale wholesale whether the person exposing the goods is or is not a wholesale dealer. The provisions of this Order shall come into force at the expiration of three months from the date hereof." The Order is dated May 7, 1929, and is No. 395 of Statutory Rules and Orders, 1929.

French Pomological Society.—The sixty-fifth session of the French Pomological Society will take place from September 19 to 23, at Clermont-Ferrand, under the auspices of the Puy-de-Dome Horticultural Society. The Conference, at which many interesting questions will be discussed, will occupy the first few days of the session, but the 22nd and 23rd will be devoted to excursions to places of interest in the vicinity, including Glozel, where so many prehistoric remains of doubtful authenticity were recently unearthed.

Importation of Cherries.—With the object of preventing the introduction of the Cherry fruit fly, the Minister of Agriculture and Fisheries has made an Order under the Destructive Insects and Pests Acts, 1877 to 1927, regulating the importation of Cherries into England and Wales during the 1929 season. Cherries grown in France will be admitted without restrictions until June 15, after which date those grown in the southern zone will be prohibited. This zone consists of seventeen departments, including the whole of the Departments of Ardèche and Drôme. Cherries from the central zone (twenty-one departments) will be admitted until June 20, and those grown in the northern departments until July 6, after which date the importation of French Cherries will be prohibited, except of those grown within a small district around Honfleur, details of which appear in the Order. Cherries grown in Italy will be admitted without restrictions until June 10, after which date those grown in the region of Apulia will be prohibited; after June 20, this prohibition will extend to Cherries grown in the regions of Basilicata, Calabria and Campania; after June 30, the importation of Cherries grown in any part of Italy will be entirely prohibited. Certificates of origin must accompany Cherries grown in any other European country which are imported after June 15. Copies of the Order may be obtained on application to the Ministry.

British Mycological Society.—The Annual Phytopathological Excursion will take place on June 8, at the Royal Horticultural Society's Gardens, Wisley. Members will meet at the entrance to the Gardens at 11.30 a.m., and should bring lunch. Tea will be provided. Routes :—By train from Waterloo (9.40 a.m.) to Kingston, thence by bus No. 115 (10.30 a.m.), or No. 620 (10.20 a.m.). Book to the Hut Hotel. Alternatively by road from Byfleet or Effingham Junction, a walk of about three-and-a-half miles in each case; trains, Waterloo, 9.24 a.m., arrive Byfleet, 10.13 a.m.; Waterloo, 9.45 a.m., arrive Effingham 10.21 a.m.

Aldenham House Gardens.—By kind permission of the Hon. Vicary Gibbs, the gardens of Aldenham House will be open to the public on the Saturdays of July, August and September, and on August Bank Holiday, on the same conditions as before :—(a) that dogs cannot be admitted, and (b) that children must be under the control of a grown-up person. One Saturday, July 20, is excepted, this being the date allotted to the Elstree and District Horticultural Society for its Floral Fête, when admission will be only by payment of the Society's charges at the gates, or by ticket.

Dublin Park Gardeners.—The gardeners employed in the public gardens of Dublin (Phoenix Park, St. Stephen's Green and the Botanic Gardens) have lately been agitating through the Civil Service Representative Council for paid annual leave, which up to the present they have not enjoyed. The agitation has now, however, been successful, and the Irish Free State Government is prepared to approve of the granting of six days' annual leave with pay to gardeners and garden labourers with two years' service, on the condition that no expense is incurred in providing substitute labour. It is understood that this latter condition can be fulfilled by an arrangement with the office of Public Works.

Mr. F. R. Petherbridge, M.A.—Among the several research workers who have devoted special attention to soils in glasshouses and the investigation of pests and diseases of fruit crops, Mr. F. R. Petherbridge, M.A. (Natural Science Tripos, Cantab., and Diploma of Agriculture, Cantab.), is one of the most brilliant. During 1910-12, he worked at the Rothamsted Experimental Station in collaboration with Sir John Russell on the sterilisation of glasshouse soils and the cause of "sickness" in glasshouse soils, and the results of these investigations appeared in the *Journal* of the Ministry of Agriculture and the *Journal of Agricultural Science*. It was in 1912 that Mr. Petherbridge accepted the post of Biological Adviser to the Eastern Counties Province at the School of Agriculture, Cambridge, and he still retains that position. His work entails the giving of advice on pest control to growers, mainly in conjunction with county officers, and the carrying out of research work regarding the control of the more important pests of agriculture and horticulture in the area. In conjunction with Mr. J. C. F. Fryer, of the Ministry of Agriculture, and Mr. M. A. Husain, he has worked out detailed life histories of the capsid bugs on Apple trees, and carried out numerous experiments on the control of the Apple capsid bug (Plesiocoris rugicollis); these experiments show that the time and method of spraying are very important. In conjunction with Mr. Thorpe, he has worked out the life history of the common green capsid bug (Lygus pabulinus) which is now a serious pest on Currants, Gooseberries, Strawberries, Dahlias and many other crops. In conjunction with Mr. Tunnington, he found how the Apple sawfly can be controlled (*Journ.* Min. Agric., Feb., 1929), while in 1913-15 he worked on the American Gooseberry mildew to show that this disease could be controlled on a commercial scale by spraying with lime-sulphur, and that tipping was of little commercial value. More recently he has demonstrated the capabilities and limitations of tar distillate washes. Mr. Petherbridge's observations on Silver Leaf disease over a number of years have shown that cutting out diseased parts of Plum and other trees at the right time is a very important factor in its control. Some of his experiments on Potato blight were published in the *Journal* of the Ministry of Agriculture in January, 1919, and June, 1920. He has also worked out the life history of the Strawberry tortrix, which caused a great deal of damage in the Wisbech area some years ago, and in conjunction with Mr. H. W. Miles has conducted experiments in the control of wireworm, more especially in glasshouses (*Journ.* Min. Agric., Jan., 1929, *Annals of Applied Biology*, Aug., 1927). Another useful investigation was the working out of the life history of the Turnip mud beetle and the best means of reducing the damage it causes, and last year Mr. Petherbridge found that naphthalene gave an extraordinary good control of the Cabbage-root fly. Mr. Petherbridge is the author or joint author of many papers that have appeared in the *Journal* of the Ministry of Agriculture, *Annals of Applied Biology*, and other publications, and his versatility is shown by the fact that he has dealt with the pests and diseases of Wheat and the fauna and flora of flooded fenland, in addition to the troubles that vex Potatos, Strawberries, Apples and Plums, and the investigation of soils.

MR. F. R. PETHERBRIDGE, M.A.

Rose Rust.—Mr. Courtney Page, Hon. Secretary, National Rose Society, 28, Victoria Street, S.W.1, is anxious to collect as much data as possible concerning the disease known as Rose Rust that is becoming rather prevalent among Roses. It usually makes its appearance about the end of June and attacks the Rose foliage on the underside. It may easily be identified by its browny-red and black sooty spots, which have the effect of causing the leaf to die and fall. Mr. Courtney Page will be glad if any of our readers who may have plants attacked with the disease during the summer, would be good enough to send him specimen leaves. It would be very helpful, too, if they would state, if possible, the stock on which the Rose is budded, or where the plants were obtained.

Flowering Plants of South Africa.—Part 32, Vol. VIII, October, 1928, of *The Flowering Plants of South Africa*, recently issued, contains admirable coloured plates, and descriptions of Leucospermum glabrum (t. 311), Corycium tricuspidatum (t. 312), Eulophia caffra (t. 313), Buddleia auriculata var. euryifolia (t. 314), Aloe longistyla (t. 315), Disperis Cooperi (t. 316), Ixia monadelpha (t.317), Cyanotis lapidosus (t. 318), Eulophia fragrans (t. 319), and Streptanthera cuprea (t. 320). These are all indigenous to South Africa, as, indeed, are all the plants which appear in this extensive work, which is edited by Dr. J. B. Pole Evans, C.M.G., F.L.S., and is published in this country by T. Reeve and Co., Ltd., Bank Street, Ashford, Kent. The work is issued in parts every three months, the annual subscription being £3; Vols. I to VIII, complete, may be had at £3 6s. each (in cloth). Leucospermum glabrum, the first plant figured in Part 32, a member of the Natural Order Proteaceae, and found in Cape Colony, is a comparatively rare species, being, apparently, confined to the George and Knysna districts, where it was collected by Burchell and Bowie over one hundred years ago. Corycium tricuspidatum (Orchidaceae), is of botanical interest, but of little decorative value. On the other hand, Eulophia caffra, belonging to the tribe Vandeae of the Natural Order Orchidaceae, would appear to be decorative as well as very interesting botanically. Buddleia auriculata var. euryfolia is described as a graceful shrub, attaining a height of seven feet, with slightly drooping branches, and cymose inflorescences of cream-coloured flowers, with red-tinted corolla tubes, and with the characteristic, but not so pungent, scent of B. salvifolia. This variety occurs near Barberton and Lydenburg, in the Transvaal, and is also found in Natal and Griqualand East. At Waterval Boorn, Transvaal, it was collected "growing in very moist places between boulders below the waterfall"; in this country B. auriculata var. euryfolia should make an attractive conservatory plant. Aloe longistyla is found in the south-eastern and central part of the Cape Province; the reddish-orange flowers, produced on a stout stem, have conspicuously long filaments and styles. The large-hooded flowers of Disperis Cooperi are rosy-lilac in colour, and are produced in an erect raceme. Belonging to the Natural Order Orchidaceae, it bears the name of its discoverer, Thomas

Cooper, who found it more than sixty years ago near Nelson's Kop, at the summit of the Drakensburg. Ixia monadelpha is an attractive species, its flowers, borne in spikes of eight, being cadmium-orange in colour, with dark blotches at the throat, although, apparently, it has various colour forms. Cyanotis lapidosus is an attractive little Commelina-like plant of prostrate habit, growing naturally in dense masses in crevices of cliffs; it has reddish, succulent stems, and semi-succulent leaves, reddish on the undersides, the pink flowers having light blue, feathered stamens. Eulophia fragrans has cream-coloured flowers of no special charm, produced in a dense raceme, while Streptanthera cuprea is a charming member of the Natural Order Iridaceae, very close to Ixia; the corolla lobes are described as bittersweet-pink in colour, and they have each two dark spots at the base.

"The Scottish Forestry Journal."—This Journal is the official organ of the Royal Scottish Arboricultural Society, members of which will welcome the recent publication of Part I, Vol. 43 (March, 1929), which contains much information of value to foresters. Sir Hugh Shaw Stewart, Bart., writes on the "Various Aspects of Sitka Spruce on Ardgowan Estate, and various deductions arrived at." The deductions are of economical interest, and the conclusion arrived at by Sir Hugh Shaw Stewart is that it is not good policy to plant Sitka Spruce pure, but to plant it, if the ground is suitable, alternately with Japanese Larch at five-and-a-half feet apart each way; if the ground is too wet for Japanese Larch the Common Spruce should be substituted, although this latter must be regarded as second best. The Douglas Fir Adelges, the aphis responsible for the Christmas-tree effect taken on by Douglas Firs, is dealt with by Mr. Frederick Laing, of the British Museum (Natural History), and Mr. John T. Smith writes on "The Home Timber Trade and the Derating Scheme." One of the most valuable articles in this interesting journal is that by Mr. R. Cowell-Smith, on "Turf-planting: Its Practical Uses and Possibilities," while another of special interest to the student of silviculture is "The Soil and the Forest: Soil Classification and Description," by Mr. George K. Fraser; a lengthy and comprehensive treatise. Professor A. W. Borthwick, D.Sc., suggests that, through the medium of *The Scottish Forestry Journal*, facts concerning the many old and remarkable trees in Scotland be placed on record; Dr. Ernest V. Laing, discourses on "The Living Tree," and Mr. P. Murray Thomson contributes an interesting article on the "Utilisation of Colliery Pit-banks." The latter part of the publication is devoted to reviews of books associated with silviculture, and a Report on the activities of the Society. The journal is well printed, and several of the articles are excellently illustrated, the whole reflecting great credit on those responsible for its production.

Destruction of the White Fly by Parasites.—Many people who have greenhouses find their plants troubled with this pest. There are several methods of dealing with it; the latest is that of killing it by means of parasites. The Empire Marketing Board and the Ministry of Agriculture, acting with the Experimental Research Station at Cheshunt, in Hertfordshire, have arranged a plan for the distribution of a parasite which lays its eggs within the scales or egg-houses of this fly and thus destroys the pest in its young state. This parasite is entirely harmless to plants; indeed, it is dependent on the White Fly for its existence, and, although the method is slow, it is very sure. The parasite is known as the chalcid wasp, and the Research Station at Cheshunt will, so far as they can, supply it to owners of glass-houses and conservatories. Owners should write to the Entomologist of the Station, Cheshunt, Herts, for information concerning the distribution of this parasite.

Appointments for the Ensuing Week.—Tuesday, June 11: Royal Horticultural Society's Committees meet (two days); Jersey Gardeners' Society's meeting. Wednesday, June 12: Sussex County Agricultural Society's Exhibition (two days); Sheffield Chrysanthemum Society's lecture. Friday, June 14: Royal Horticultural and Arboricultural Society of Ireland's meeting. Saturday, June 15: Leeds Paxton Society's Viola Show.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Kew Gardens.*—We have before us Sir William Hooker's last report on Kew Gardens, dated April 5, 1854. It tells us that the visitors have increased from 9,174 in 1841 (he might have said from 0, or some undiscoverable number in 1831) to 331,210 in 1853; and he points with just pride to the Museum there, almost the work of his own hands, compared with which the botanical part of the British Museum is contemptible. "In less than seven years from its foundation a collection is formed, at almost no expense to the country, mainly from donations, such as no other country possesses and such, we may truly say, as no other country has attempted to form, notwithstanding its manifest advantages to a great commercial nation." The Director also announces the donation to the Museum of the books and herbarium of the late Dr. Bromfield, and the far more important collection formed by Mr. Bentham, a noble gift, for it is the second herbarium in this country, and one of the finest in existence. Such are among the early results of a system of management of which all must approve; and at what cost is this effected? It will be found from the estimates that all which Kew asks for this year is £11,000, less than two-thirds of what the St. James', Green and Hyde Parks require. And this, we presume, includes the cost of botanical lectures which it is in the contemplation of the chief commissioner to have delivered during the summer. Lectures explanatory of the application to practical purposes of the vast riches gathered together at Kew, were all that remained to render the establishment a perfect machine for public instruction. If, as we take for granted, these are to be entrusted to Dr. Hooker, we know enough to be certain that they will not only add much to the value and popularity of Kew Gardens, but greatly raise the establishment in the eyes of the scientific world. Such is a rapid sketch of the result of a fair inquiry into notorious abuses, when entrusted to independent, resolute and competent men. Might not similar advantages be derived from such an examination into the Royal Forests? *Gard. Chron., June* 10, 1854.

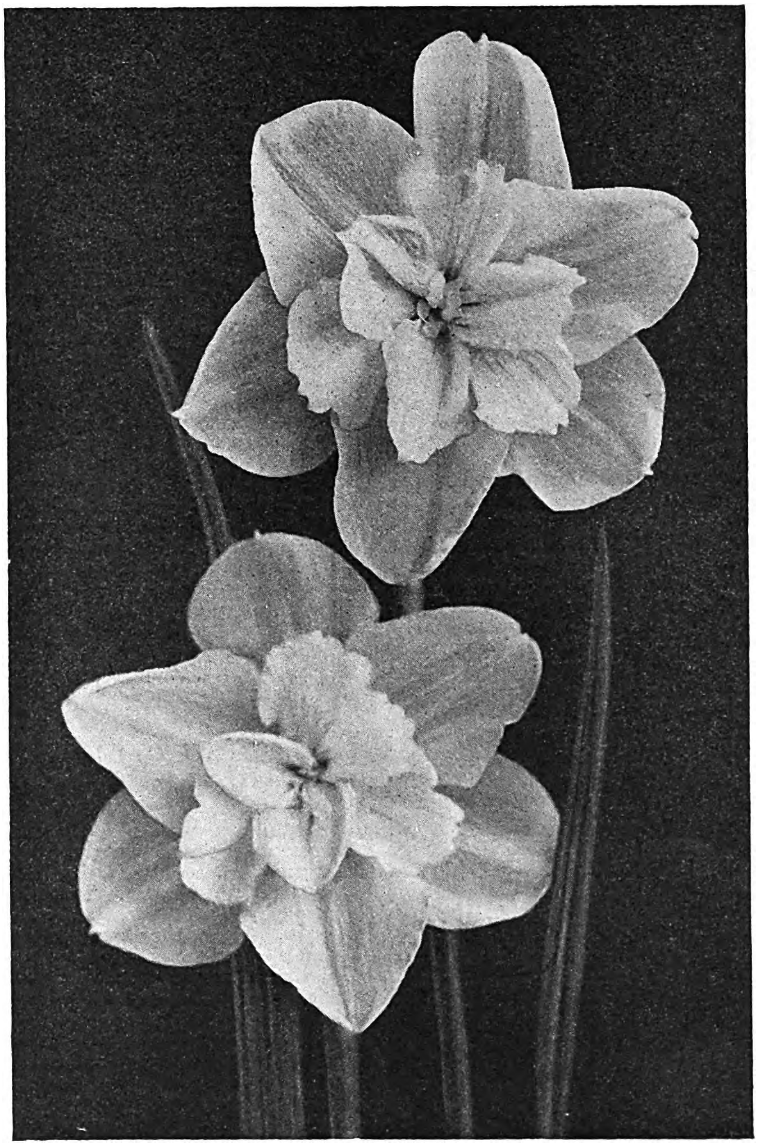

FIG. 211.—NARCISSUS TRIPLEX.
R.H.S. Award of Merit, Chelsea Show, May 21. Flowers pure white.
Shown by Mr. Herbert Chapman. (see p. 391.)

Publication Received.—*Spanish Gardens*, by Mrs. Patrick Villiers-Stuart; royal octavo, cloth, gilt, pp. 139, with eighty-six full-page plates (six in colour) and numerous illustrations in the text. Messrs. B. T. Batsford, Ltd., 94, High Holborn, E.C.; price 25s. net,

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Treatment of Imported Orchids.—Opportunity is now offered for replenishing stocks of many species which have been found difficult to raise from seeds in this country. Specimens are being imported and offered for sale in the open market direct from the cases, and, as a rule, these are received in fairly good condition, especially when the plants have been collected in a dormant state. If these are given the right treatment when received, they soon establish themselves and give a good return of flowers in their proper season, particularly the various Dendrobiums, Oncidiums, Catasetums, Vandas, etc. When imported plants are received they should be placed in a cool, airy house for some days, and gradually exposed to daylight (not direct sunshine at this season). They should be overhauled thoroughly, cutting away any decayed pseudo-bulbs or growths, and well cleansed with the aid of a sponge and small brush, and a safe insecticide, to free them of insect pests, care being taken not to injure the eyes of growing points, especially of any bulbless kinds, such as Phalaenopsis and Aerides. If small quantities are being dealt with, the plants may be fixed separately in pots or pans and kept in position by neat stakes, the roots being held securely by broken crocks placed among them to about two-thirds of the depth of the receptacles. They should be placed in shady positions, in the division best suited for their culture; heavy watering should not be practised at this stage, and the pots and surroundings should be sprayed occasionally to promote root action and renewed growth until signs of activity are showing, when some of the crocks may be removed, leaving ample for drainage, and the receptacle filled with a compost consisting chiefly of fibre and Sphagnum-moss for most of the epiphytes, adding a little fibrous loam for the terrestrial kinds. When the species are known to be lime-loving subjects, and limestone is used in the compost, as with Cypripedium niveum, etc., Sphagnum-moss should not be used, as lime or lime-water soon kills the moss, which then decays and quickly turns the compost sour. Continue to keep the surroundings moist by syringing, and as the roots and growths advance, water will be needed in increasing quantities each time the compost appears dry, and more light will be required to build up successful flowering growths. A keen search should be made frequently for any signs of imported insect pests, which sometimes appear after the plants begin to grow, as, for instance, the Cattleya fly, the eggs of which were deposited in the eye of the growth when in a dormant state, its presence being shown by the abnormal and stunted appearance of the subsequent growth which, if cut off at the base, and opened, will disclose a nest of partially developed pupae. If holes are noticed through which any mature flies have escaped, fumigating should be done to destroy them before they lay their eggs in surrounding plants; sometimes the grubs are found in the roots, where they are best killed by piercing the swollen part with a strong pin.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

Thinning Fruits.—Apple and Pear trees on walls and fences have set, in many instances, an abundance of fruits, and to obtain the finest specimens there should be a judicious thinning of the crop. In some cases the trees make an effort to adjust the balance by shedding a considerable number of the young fruits, but where there are excessive crops, artificial aid is also necessary. For not only is it bad for the trees to be overcropped, but it produces a tendency to biennial bearing. All small and badly-shaped fruits should first be removed, and, if there still remains an overcrop, the fruits should be reduced to one or two per spur. In many cases whole trusses of fruitlets may be removed to the advantage of the spur, as when it is freed from feeding the fruits, the energy of the tree is concentrated on the production of fruit buds for the following year. The trees should not, at any time, suffer from the lack of moisture at the roots; there is always a risk, especially with trees on walls, of this happening. Much may be accomplished to conserve moisture by heavy mulchings of half-decayed manure and occasional soakings of clear water with the aid of a hose.

Summer Pruning.—Summer pruning, or pinching, is necessary in order to check undue vegetative growth, and to induce fruitfulness, but the operator should be guided by the variety and character of the tree. With Apples, for example, such varieties as Irish Peach, Beauty of Bath, Langley Pippin, Lady Sudeley, Worcester Pearmain and others, are essentially "tip" bearers, that is, they produce fruit buds at the tips of the season's growths. It is, therefore, necessary to exercise some judgment when summer pruning such varieties. Summer pruning consists of shortening back all side-shoots, or breast-wood, to five or six leaves from their point of origin. It tends to throw more vigour into the buds at the base of the growths, and to induce the development of fruit buds there instead of leaf-buds. It allows air and light to play their part in ripening the wood, and also favours the production of richly-flavoured fruits. Summer pruning should not, however, be done too drastically, or more harm than good may result. The two top buds on the part left may grow out, and when these have attained the length of five or six inches, the growing tips may be pinched out. It is seldom that a tertiary growth takes place. Meanwhile, the buds at the base are being stimulated and "plumped up," and will form good fruiting spurs next season. When trees tend to grow luxuriantly it is an indication that they require root-pruning, or "ringing," to restrict the upward supply of sap, and no amount of summer pruning will induce them to bear fruits. Such trees should be root-pruned next autumn, or so soon as the leaves commence to fall; the earlier the operation is carried out then, the better.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Plants in Tubs.—In gardens where facilities for protecting such plants during the winter are available, specimens of half-hardy plants are useful and ornamental for decorating the flower garden and terraces during the summer months. These may now be placed in their summer quarters with safety, provided they have been hardened off. A great deal of real pleasure may be obtained from growing good specimens in pots or tubs, and if the proper places are chosen for them in the open, they add considerably to the effect and charm of the garden. Among easily-grown shrubs suitable for this purpose are Myrtus communis and M. Luma; Punica Granatum, the Pomegranate, and its double-flowered forms; Oleanders, and Hydrangeas, which may now be had in a wide range of varieties, well-grown specimens lasting a long time in good condition. Probably there is no more popular plant for this purpose than the beautiful African Lily, Agapanthus umbellatus, which, with its umbels of rich blue flowers and handsome foliage, is one of the most desirable plants for furnishing terraces or formal parts of the flower garden.

Sub-Tropical Bedding.—Happily, sub-tropical plants are not used so freely in the flower garden at the present time as they were formerly, but where the material is available, groups of these, if used with discretion, give quite a good effect. Shelter from wind is an important factor, otherwise the tips of the foliage will soon become damaged and unsightly. A warm corner, with the necessary shelter, which will also act as a suitable background so essential if the full beauty of these plants is to be realised, should be selected, and the plants put out after being thoroughly hardened off. Many interesting and handsome subjects may be used for this form of bedding. Large specimens of Palms, Tree Ferns, Agaves and such like associate well together and give character to a quiet dell; among Palms, Phoenix canariensis, Chamaerops excelsa and C. humilis are the hardiest, but large specimens of Kentias may be used in the open in the milder parts during the summer months. Cordyline australis and C. indivisa, as well as various forms of Phormium, the New Zealand Flax, are useful; also the Blue Gum, Eucalyptus Globulus, and the Castor Oil Plant, Ricinus communis, of which the variety Gibsonii has beautiful, bronze-coloured foliage and is very effective in a sunny position

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Early Peaches.—As the fruits of all the early varieties in houses will now be rapidly swelling to maturity, stop pinching the shoots and finish tying down the growths, so that plenty of light and air will be admitted for the purpose of increasing the size and colour of the fruits. If pendant fruits have not been lifted up to the light, no time should be lost in the completion of this operation, although when Peaches set enough fruits and to spare, careful thinning renders this latter work unnecessary, as the best placed fruits are retained. Syringe the trees freely with soft water until the fruits show signs of ripening, so as to ensure freedom from red spider until after the fruits are gathered. Examine the borders, and if there is the slightest danger of the most active surface roots becoming dry, water well with clear tepid water, and mulch with short stable litter. Ventilation from now onwards should be on a most liberal scale and as the fruits reach full size and show signs of softening, do not allow them to hang until ready to drop into nets or hay, as is often done, with the result that more are spoiled than saved, but when dry and cool, gather the Peaches and place them in an airy Grape room to ripen.

Successional Peach Houses.—The successional Peach trees will now require syringing twice a day, and the roots confined to inside borders should receive an abundance of water besides a good mulching, especially if the trees have been checked to secure good fruits. Soils vary in quality; some loams are rich enough to produce perfect wood without the aid of much manure, and with these, generous applications of fertilizers are unnecessary, but with poorer soils, feeding of the roots, provided the drainage is good, by mulching with manure and applying liquid manure from the time the fruits are set until they are of full size and coloured, will be highly beneficial. Ventilation is equally as important as watering; it should commence in the morning with a rising temperature, after a rise of 5° over the night temperature, which ranges from 50° at first to 60° or 65° after the fruits have stoned. In the summer, Peaches will relish a night temperature of 70°, but 60°, with front ventilation, is quite high enough in the morning, this being balanced by closing the house in time to trap the sunheat, at the same time ensuring a moist atmosphere.

Late Peach Houses.—If there is any disbudding of the late Peach trees still to be done, a final thinning should be made as the young shoots are tied in; crowding of the growths, especially on late trees, should be avoided, and the shoots should be tied in at least six inches apart to allow for the full development of the foliage. After tying in, a little freedom of growth about the fruits will do no harm, as a little natural shade keeps the fruits moist and cool, conditions favourable to the production of large fruits, and preferable to artificial shading. When the fruits are ripening, fumigation and syringing should receive regular attention, and, as large borders are generally provided for these trees, labour in watering may now be economised by a good mulching with half-decayed manure, or less stimulating substances, according to the requirements of the trees.

PLANTS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain,
Brocket Hall, Hertfordshire.

Carnations.—Plants of Perpetual-flowering Carnations that are being grown to produce flowers during the winter months are, in most cases, ready for potting on into the pots in which they will flower. Those from cuttings rooted in November last, and which have been kept growing, will by this time have well filled their four-and-a-half inch receptacles with roots and may now be potted into six- or seven-inch pots. Personally, I favour the former if flowers are to be gathered in any quantity during the winter months. The compost for this potting should consist chiefly of good open loam, to which may be added some short, sifted manure and plenty of sharp grit; to each barrow-load of soil add a six-inch potful of bone-meal and a four-inch potful of Carnation fertiliser. The compost should be prepared several days before it is used. Firm potting is to be recommended at this stage, therefore it is essential that the compost should be in such a condition that it may be made firm without becoming caked. After potting, stand the young plants on a bed of ashes in a low, span-roofed house, if possible, until such time that the roots are active again, when they may be removed to skeleton frames. Protect them from heavy rain, and water carefully at all times, never allowing the plants to suffer through lack of moisture at the roots. Aphis and thrips are sometimes troublesome, but these may be kept in check by spraying with a Nicotine solution. Plants that are to produce flowers during the early winter months should not be stopped after the end of the present month, and certainly not immediately after potting. Stake the plants early so as to prevent the young growths being damaged.

Stephanotis floribunda.—This delightfully-scented stove or intermediate house climber will soon have passed through its first flowering stage, and will now be making a considerable number of fresh growths, which, if regulated by careful pinching, will produce two excellent crops of flowers later. This climbing plant enjoys warmth, with plenty of atmospheric moisture, and gives the best results if its roots are restricted somewhat, although the plants should receive liberal supplies of stimulants while in active growth. Good fibrous loam and peat in equal parts, with charcoal and plenty of silver sand added, should form a suitable compost for this charming climbing subject.

Nerines.—These will, by this date, have practically completed their growth; they should be stood on a shelf in full sunshine, and should receive no water until they commence producing their flower spikes in the autumn. Only by such treatment can Nerines be made to blossom successfully.

Annuals.—The conservatory or greenhouse may be kept very bright at a very small expense by the use of annuals, notably Statice, Larkspurs, Clarkias, Zinnias, Salpiglossis, Stocks, Asters, Lobelia tenuior and Petunias. These subjects are not very particular as to soil, but a rich, open compost is to be recommended. Prick out the young seedlings in well prepared soil in a cold frame, and when they have become well established, lift them and pot them in receptacles best suited to meet their requirements. Careful watering is necessary after potting, but once the plants have filled their receptacles with roots, liquid manure should be given freely.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder,
Knowle Gardens, Dunster, Somerset.

Onions.—Beds of Onions should be kept clear of weeds, and where large specimens are wanted they should be given ample supplies of water, and a light dressing every week of an artificial manure, such as Clay's fertiliser or sulphate of ammonia, dusted along the lines and around the bulbs, but take care not to over-feed them Spring-sown Onions may now require thinning to about two inches apart, and after thinning, draw a little soil up to the plants left so as to keep them upright. At this stage, also, a good dressing of soot scattered broadcast over the plants when they are dry will be beneficial.

Potatos.—These are now growing fast and, so soon as they are nine inches high, they should be earthed up, but before doing this, give a light dressing of an approved artificial manure.

Swedes.—A batch of Swedes should now be sown to provide roots for winter and spring use. When the seedlings are large enough, thin them to ten to fifteen inches apart. The roots may be taken up and stored in the same manner as other root crops.

Kohl Rabi.—The Kohl Rabi seedlings, which were sown some time ago, will now be ready for transplanting. Make a further sowing to provide a later crop.

Autumn Broccoli.—Where the plants are ready and the ground for them has received a good dressing of decayed manure, a large batch may now be planted, so as to provide a good autumn crop, to be followed by a later variety.

Turnips.—A further sowing of Early Snowball, Golden Ball and Veitch's Red Top Turnips may be made to provide a succession of good roots. The seeds should be sown thinly, so as to dispense with thinning of the seedlings so much as possible.

Spinach.—Seeds of summer Spinach may be sown at intervals of two weeks to maintain a succession. Early-sown Spinach should be thinned where necessary and the bed hoed.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq.,
Rosemont, Monkton, Ayrshire.

Vegetables.—Thin main-crop Carrots and Beet at an early stage, when it may be done with little disturbance to the seedlings retained. A distance of ten or twelve inches should be allowed, to permit of the free use of the hoe. Naphthalene or sheep dip should be applied immediately after thinning, either in liquid form or mixed with dry sand, and scattered broadcast, to drive off the Carrot fly. As the roots of the Carrots swell, a little soil should be drawn up around their collars to prevent greening and also as a protection against the fly. On light soil, or during drought, a mulch of short grass is of great assistance to these crops.

Early Cauliflowers.—These should be well supplied with water, followed by applications of liquid manure or a dusting of sulphate of ammonia around, but not on, the plants. Cultivate and draw soil up to dwarf Beans after thinning them, to prevent damage by wind. Runner Beans should be supplied with stakes and loosely tied to them. The main crop of Brassicas should be planted before the plants become overgrown. As a general rule twenty-four inches each way is a suitable distance at which to plant them. If pricked off in a nursery bed as previously suggested, good, sturdy plants should now be available. Lift each with a ball of soil, if possible, and transfer them quickly to their new quarters, so as to check them so little as possible. When transplanting them from the seed-bed, it will assist the plants if the roots are dipped in a thick puddle of soot and earth before planting, which operation should be done, if possible, before or during a showery spell.

The Rock Garden.—Attend constantly to the removal of weeds while they are quite small. As Aubrietias and dwarf Phloxes, and other low-growing, early-flowering subjects, pass out of flower they may be cut back; if a supply of good fresh cuttings is wanted in July or August this is essential, but otherwise large patches or plants hanging over rocks may be left untouched, or only lightly trimmed. Remove seed-pods from Gentiana verna and other choice plants if the seeds are not wanted for increasing the stocks.

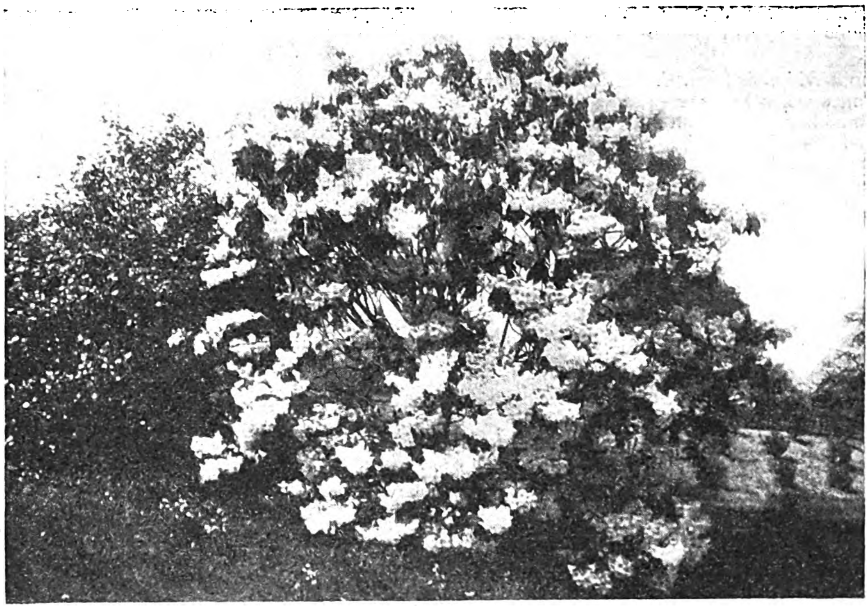

FIG. 212.—RHODODENDRON AUCKLANDII AT BRYNGARW.

(see p. 420.)

Potting.—Chrysanthemums for late work should be transferred to their flowering pots, stakes supplied at once, and the plants set in order in their growing quarters. They should stand either on a good bed of ashes, or on boards, to prevent the ingress of worms, which completely spoil and set at nought all carefully designed arrangements for the welfare of the plants. Winter-flowering Carnations should also be placed in their flowering pots at an early date, using a compost as recommended previously, but in a rougher state. See that the roots are soaked well previous to turning the plants out, or many of the best roots will adhere to the pots. Pot them moderately firmly, without the aid of a rammer or potting stick, and withhold water at the roots for a few days. Stopping of the shoots should be discontinued until the plants become established. Where a suitable house is available, these Carnations should be grown under glass. Should red spider appear, syringe with a weak solution of salt and water (one tablespoonful of salt to a gallon of water), taking care to ensure that the solution reaches the undersides of the leaves, and spray the plants with clear water on warm days.

TREES AND SHRUBS.

RHODODENDRON AUCKLANDII.

The tree represented in Fig. 212, was planted by Captain Traherne in his garden at Bryngarw, Glamorganshire, some twenty-five years ago. It is now about sixteen feet high and, except for the Camellia beside it, is entirely unsheltered. Notwithstanding the late severe winter, it has never flowered more gorgeously than this year. *C. L. Ward-Jackson.*

ESCALLONIAS.

The Escallonias comprise a genus of handsome, South American generally evergreen shrubs, with attractive, glossy foliage. Most of them make excellent covering plants for pergolas or bowers, although some of the more tender species need the protection of a wall; several of them make attractive specimen bushes, while a few of the more vigorous species are ideal hedge plants.

E. macrantha is probably the best known of the genus, and is a beautiful evergreen shrub, with bright, shining green leaves and pinkish-red flowers which are produced very freely. It is of vigorous constitution, grows very quickly, and makes an excellent hedge plant in mild localities. There is a white form of it and also a richly coloured form known as E. m. var. sanguinea.

E. montevidensis (syn. E. floribunda) is a free-flowering species bearing pure white flowers in small bunches, but it should be planted in a sheltered position, while E. Philippiana is a deciduous, small-leafed species, bearing dense panicles of snow-white flowers.

E. illinita is a gracefully branching species and one of the hardiest, with white flowers which are borne in cylindrical panicles and, in a moist atmosphere, have an almost overpowering odour; while E. Ingramii is a strong-growing, broad-leafed plant and bears clusters of bright pink flowers which are of a most pleasing shade. E. rubra is a beautiful, reddish-flowered species of compact habit, but it is somewhat tender and should only be planted in sheltered positions in other than mild localities.

E. langleyensis, raised by Messrs. J. Veitch and Sons in their Langley nursery in 1893, must be considered one of the great successes achieved by hybridisation in hardy trees and shrubs. It is the result of a cross between E. Philippiana and E. punctata, which are respectively deciduous and evergreen, but the hybrid is evergreen and an exceedingly decorative plant. It produces long, arching branches during the summer which, the following year, are clothed with blossoms borne on short twigs from the axil of every leaf. The flowers are of an attractive, rosy-carmine colour, and present a wonderful effect in June and July when the plant is at its best.

There are several other hybrid Escallonias of recent introduction which have considerable merit, among which may be mentioned E. Edinburgh, a small-leafed variety with bright rosy-carmine flowers, and although somewhat less vigorous than some others it is nevertheless a charming plant; E. Donard Seedling, a vigorous plant bearing fine trusses of pale mauve flowers in bud, opening white; and E. G. F. Ball, which has attractive, glossy foliage, a refined habit, and vivid red flowers. *A. M. W.*

FENDLERA RUPICOLA.

This erect-growing, deciduous shrub is a native of Texas and New Mexico, and belongs to the Natural Order Saxifragaceae. It is an exceedingly beautiful ally of the Carpenteria and Philadelphus, and thrives in practically any soil, if given the protection of a wall. Although quite hardy, it appears to prefer the latter, and in these gardens, grown in a southern aspect against the wall and glass of a warm greenhouse, attains the height of six feet and flowers profusely.

When in bud, this shrub is very attractive, for all the buds are rose-tinted. The flowers, appearing in April and May, are white, large, and tinted with pink externally along the centres of the petals, which are four in number. Each flower possesses eight stamens, the filaments of which are prolonged beyond the sides of the anthers into a linear lobe. The flowers are pedunculate, and are borne terminally on short branchlets, each of the latter bearing from one to three. The leaves of Fendlera rupicola are small, being about one inch in length. They are sub-sessile, oblong, entire, and are greyish-green in colour. The mid-rib of the leaf is very prominent.

Propagation may be effected by means of cuttings or seeds. *Reg. E. Moore, University Botanic Gardens, Cambridge.*

FLOWERING CHERRIES.

Of the four seasons of the year, spring gives, so far as trees and shrubs are concerned, a far greater wealth of flower and beauty than the other three seasons put together. Perhaps, coming after the bareness of winter, one notices it and appreciates it the more.

Few trees give a finer show of blossoms than the Cherries, especially the Japanese forms. In the early-flowering species the time of flowering will depend upon weather conditions. One of the earliest to blossom is Prunus incisa, which forms a small, bushy tree, every twig of which seems to be covered with flower buds which may open so early as the third week in February. The small, flesh-pink flowers are very similar to those of Prunus subhirtella, which flowers a little later. There is a form of P. incisa known as var. serrata, with distinct foliage, otherwise it is similar to the type. Both of these give very good autumn foliage effects. P. subhirtella and its form ascendens, which is the better of the two, and the variety pendula, flower in March. I do not know up to what height the type grows in its native land, probably fifty to sixty feet, but here it appears to be of bushy habit. The variety pendula is recorded by Wilson up to forty-eight feet, but I do not think we shall ever see it grow to that height in this country, where it is usually worked as a standard and on a far too short stem. If it could be worked on a stem of, say, fifteen feet or more, and an even head formed, it would not take long to form a fine specimen, as the growth is very rapid, but unless it is on a tall stem it will be trailing its branches on the ground, and much of its beauty lost.

I have tried propping up some of the branches of trees with six feet stems to try and get greater height, but they seem to resent this, and a lot of young wood began to die back.

There are three other species worth growing for early flowers, the first being P. Sargentii, which should be in every garden. It is a tree of great beauty in the early spring when opening its large, soft pink, single flowers, with its bronzy foliage, while in autumn its foliage becomes a rich crimson. It seems to be a fairly fast grower. Then there is P. pilosiuscula and its variety media. There seems to be some confusion over the two, but I think the variety media is the better plant. The type, with me, gives a small pink flower with a mass of pink stamens and, if there were fewer stamens and more petals, would no doubt be more effective. Its habit is rather a neat, upright growth with quite pretty foliage, which is rich bronze when opening. The third species I have in mind is P. Conradinae. Here again there appears to be more than one form. The best of the two has not yet flowered, but neither has the other, although it is a much older plant. It has made rapid growth, but has a nasty trick of dying back. The foliage, however, makes it an attractive plant in spite of it not having flowered yet. The flowers are flesh-pink.

Of the Japanese Cherries there are two sections, Lannesiana and serrulata; the former may be stated to include those with green foliage, the latter with bronzy foliage. But the authorities Koidzumi, Miyoshi, Wilson and, later, Ingram, differ in their classification, and one hardly knows which section any sort really belongs to. Probably, from a garden point of view, this is of small importance. The chief point is the flowering habit of the variety. At the present moment the most popular variety, and deservedly so, is Sekiyama, known to most people as Hisakura, and by the Japanese as Kanzan. The flowers are large, rose-pink and very double; the young foliage is deep bronzy-red and often turns a good colour in the autumn. The habit of this variety is rather ascending and the growths run into single leaders rather than branches. There are two varieties very similar to this, probably both are simply new names for an old plant; they are Horingi and Ohnanden. The variety Kirin is very similar, but differs in being earlier, and the flowers have shorter stems. Two varieties I have, which also appear very similar, came under the names of Eva Gauntlett and Troiaya.

Fugenzo, often known as James H. Veitch, is somewhat like the former in colour of its flowers, but its habit is rather the opposite, as it is a dense grower, the branches inter-crossing; further, the flowers have a leafy carpel in their centre which is also observed in one or two other varieties. Its flowering season is about the beginning of May.

Hokusai, or Ojochin, is usually known as Cerasus roseo pleno and is one of the commonest. It is an early variety opening at the latter part of April, with semi-double, pale pink flowers. P. serrulata, the type plant, is of widely spreading, rather rigid, habit. The flowers are comparatively small, very double and white, and the foliage rather small and of a glossy appearance.

Shirofugen, known now as albo roseo, is one of the latest to flower and is quite one of the best. It is very distinct in its flower and foliage. The buds open pink, changing to white, are double, and change to pink before falling. They have a leafy carpel in the centre and hang on long stalks. The foliage opens almost before the flowers and is often of somewhat rounded appearance.

Okumiyako (Miyako or longipes) flowers at much the same season, and is very similar to the last-named variety. The flowers are pure white, double, have the leafy carpel in the centre, and hang in long-stemmed corymbs. It does not appear to be so well-known as it ought. I think I should put the varieties Sekiyama, albo-rose and Okumiyako as the best three of the Japanese varieties commonly grown at present.

Kojima is a good thing. It flowers early, has fragrant, single or sometimes semi-double, snow-white flowers, which hang in long corymbs among its pale green leaves. It is also known as Sirotae and Mount Fuji.

Ukon or grandiflora, of the Lannesiana section, is of somewhat poor habit. Its flowers are semi-double and of a greenish-yellow shade which makes it very distinct; the foliage in its young state is bronzy-brown.

Amanogawa, or serrulata erecta, and known in gardens as Apple Blossom, is very remarkable in that its growth is perfectly fastigiate. It is a very useful plant on this account for small gardens, as it may be grown where the larger-growing Cherries would be impossible. The flowers are in clusters, pale pink, often semi-double, and fragrant. The translation of the Japanese name is Celestial River, and equals our Milky Way. I suppose the English name Apple Blossom applies to the flowers, but this could also apply to other varieties very similar in colour and form.

Two other Cherries I would certainly include. The first is the double form of our Wild Cherry, P. Avium var. flore pleno. It flowers so very freely and regularly that it deserves its place. The other variety is the double-flowered Morello—P. C. Rhexii flore pleno. It is a slower grower and makes a finely shaped bush, flowering later than P. Avium var. flore pleno, and has very double, white flowers. None of the Cherries should, in my humble opinion, ever be pruned, except in case of necessity; the Japanese variety Sekiyama is liable to send up long, leading shoots. I have tried pruning with a view to getting them to branch, but they just go ahead again and are best left alone. Taking them all round, I doubt if any family of trees give such a wealth of bloom as these flowering Cherries, and so consistently. There are a large number of other varieties, but being as yet very scarce, I have omitted them. *Prunyrus, Hants.*

INDOOR PLANTS.

COMBRETUM PURPUREUM.

Combretum purpureum is a tropical climber of great beauty, and being of less vigorous growth than many of the climbers usually found in our stoves, it makes an excellent subject for clothing a pillar or rafter.

The flowers are a lovely scarlet-crimson, and, although small individually, are borne in a dense spike often six inches long, which later develops into a somewhat fan-shaped panicle. The spike is not cylindrical, as the blossoms stand erect on the upper surface. The rich, dark green leaves are ovate-lanceolate in shape and form a delightful background for the flower.

C. purpureum had a reputation at one time as being difficult to grow from cuttings, but the late Mr. Irwin Lynch dispelled this idea.

The compost that suits this plant best is one of equal parts good fibrous loam and peat, with a generous amount of silver sand and charcoal lumps added to ensure porosity and sweetness. Pruning should be done each autumn by cutting back the longest growths to one or two buds. The specimen here at Cambridge is at present just coming into flower; it is planted out, and climbs up one of the supports of the Palm House. *F. H. Wright, University Botanic Gardens, Cambridge.*

CLERODENDRON THOMSONAE.

There are many beautiful stove and green-house plants worthy of note, but none is more attractive when in flower than Clerodendron Thomsonae (syn. C. Balfourii).

This subject is by no means easy to cultivate, or, at any rate, to bring to perfection, perhaps the most important point in successful cultivation being the maintenance of a steady, even temperature all the time the plants are growing, any fluctuation having a tendency to hinder growth. A temperature of 70° by day and 65° at night should be maintained throughout the growing season. Another important factor is watering. Although this plant delights in moisture, over-watering is bound to ruin it, and, moreover, particular care in watering is necessary when the plant is in flower, as too generous a supply of water at the roots at this stage will cause the flowers to drop. When admitting air to the house, the creation of draughts should be avoided. Very little air is necessary and, unless the night is very warm, only a little top ventilation is required.

Propagation may be effected either by seeds or cuttings. The seeds germinate freely if sown in a compost of good fibrous loam and fine peat in equal parts, with plenty of charcoal and silver sand added. After sowing the seeds cover the pots or pans with glass. Four or five cuttings may be inserted in a three-inch pot and placed in a propagating case over gentle bottom heat. Established plants usually start growth towards the end of August, when each plant should be examined so as to ascertain whether any surface dressing is required. A compost similar to that for sowing the seeds should be used, and, so soon as the plants commence growth, ample moisture should be afforded them, both at the roots and by means of overhead syringing—the latter should be done twice a day at least, three times if time and weather will allow. The plants should be given every encouragement to make growth until the beginning of March, when those required as specimen plants should be tied to the trellis and trained.

Many growers prefer to train them balloon-shape, which is done by securing the frame to the rim of the pot in which the plant is growing and training the growths over it. During the month of May the plant commences to flower and continues for a month or six weeks, and a beautiful sight it is, with its bright red petals, and the white, waxy calyx affording a most striking contrast. When the flowers are about to open, the temperature of the house should be either lowered or the plants moved to a cool house; this will not harm them in any way; in fact, this latter method is the best, for plants kept in a stove too long will lose their flowers prematurely. As the flowers begin to fade they should be cut off with a length of stem and two or three pairs of leaves; in this manner the plants receive all the pruning necessary.

To obtain a succession of bloom, plants should be started into growth at different periods; by this means Clerodendron Thomsonae may be had in flower for about six months. *G. B.*

SAINTPAULIA IONANTHA.

This beautiful, little warm-house plant, often referred to by gardeners as The Stove-flowering Violet, grows only about three or four inches high, and produces a number of pretty, deep blue flowers during the winter months. It is easily raised from seeds or propagated by leaf-cuttings. Leaf-cuttings root readily if inserted in a sandy compost, and placed in a propagating case, in a warm house.

Seeds should be sown from January to March, in well-drained pots or pans containing a compost of loam, leaf-soil and sand. These should be placed in a temperature of from 60° to 65°, and the seedlings treated in practically the same way as that recommended for Gloxinias. Five-inch pots or pans will be quite large enough in which to flower the plants.

Saintpaulia ionantha makes a beautiful edging for the stages of the stove or intermediate house, or for groups of plants, while used in small vases it is admirable for table decorations. *E. Baker, Garston Manor Gardens, near Watford, Herts.*

OURISIA MACROCARPA.

At Chelsea Show a plant under the above name (Fig. 213) was shown by Lady Aberconway and Hon. H. D. McLaren. I can find no reference that this plant has ever been introduced, although there is no reason why it should not be so. It is closely allied to O. macrophylla, both having white flowers, and a similar habit of growth, although O. macrocarpa has the larger flowers. The chief differences are that the last-named has stout, glabrous or nearly glabrous stems and leathery leaves, while the other has more slender, pubescent stems and sub-membranous leaves. Light was beginning to fail in the tents by the time I observed the plant, to be able to note these characteristics, but the large, white flowers were very conspicuous and numerous, on a stout, upright stem. O. macrocarpa is recorded from many districts in the South Island, New Zealand, from sea-level to an altitude of 3,500 feet, and flowers from November to January in that island. It is the finest plant of the eight described species of the genus in New Zealand. At the same show, O. alpina was accorded an Award of Merit. Previously recorded awards include a Silver Knightian Medal for O. coccinea, which has little but its colour to recommend it. *J. Fraser.*

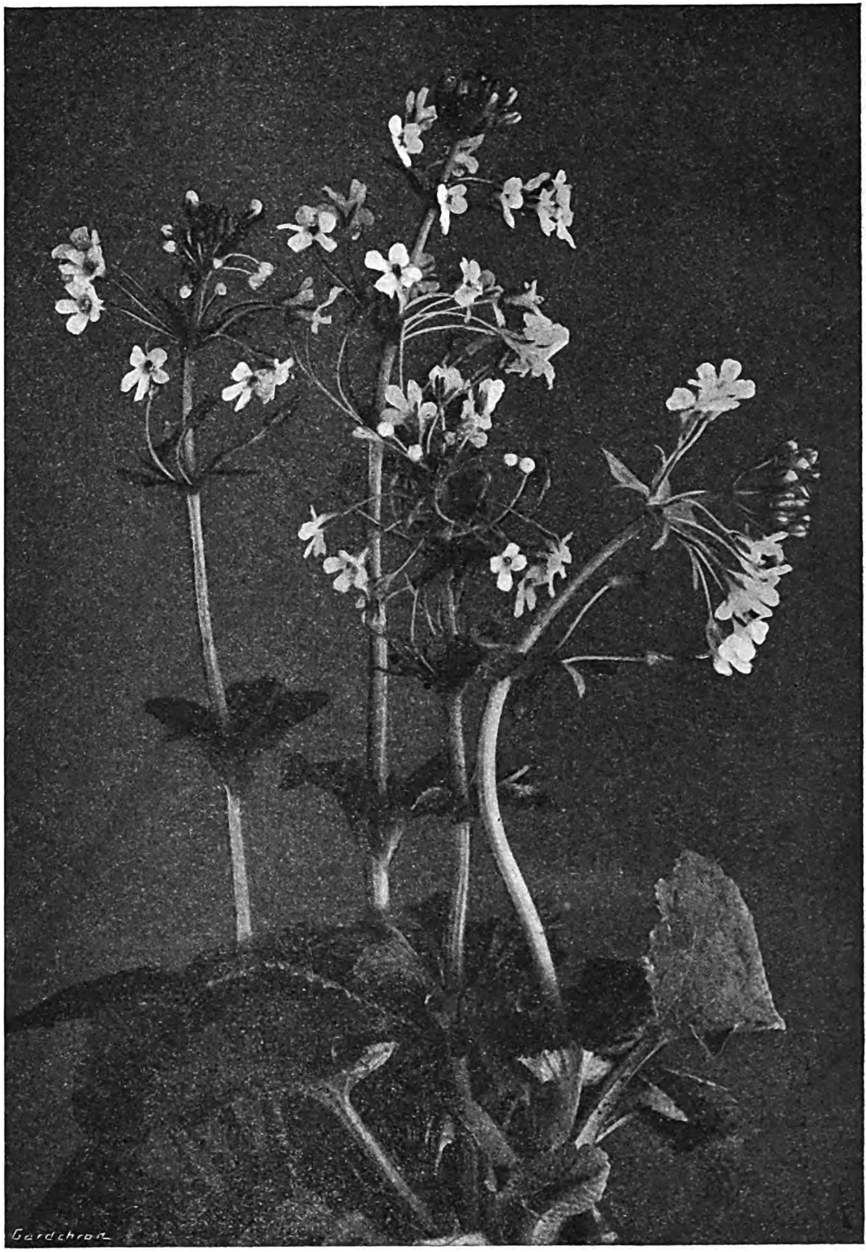

FIG. 213.—OURISIA MACROCARPA.

ALPINE GARDEN.

SAXIFRAGA WALLACEI.

A FRIEND recently sent me a plant of Saxifraga James Bremner, which is stated to be the largest flowered of all the white mossy Saxifrages. In a covering letter he gave me the information that S. James Bremner was finer than S. Wallacei which was not a good doer. The latter remark surprised me, as, until then, I had not heard of any one having trouble with this glorious plant. But when one hears of such an experience it sets one trying to discover how far this has any connection with any foibles the plant may have. Within a day or two, an opportunity of comparing experiences occurred when an experienced cultivator of hardy and other flowers visited me, and he told me that at Dumbarton he experienced difficulty with S. Wallacei, which he found only succeeded in a rather dull corner and in poor soil.

I have cultivated this Saxifrage under different conditions for close on forty years, and have always found it grow and flower freely. In comparison with S. James Bremner I observe that the latter has rounded flowers, possibly a trifle larger than those of S. Wallacei; but those of S. Wallacei are of a purer whiteness. I have not had S. James Bremner long enough, however, to make a fair comparison, but I find that S. Wallacei grows and flowers very freely in light, dry soil and is especially fine in a double wall.

The parentage of S. Wallacei remains a little obscure. In 1903 I had a certain amount of correspondence on this subject and appealed to my departed friend, Mr. Robert Lindsay, of Kaimes Lodge, Edinburgh, formerly Curator of the Royal Botanic Garden, Edinburgh, for information on the origin of S. Wallacei. The following extracts from his letter, dated July 1, 1903, may be of interest to Saxifrage lovers:—"S. Wallacei was raised by George Wallace, of the Dean Cemetery, Edinburgh, from seed of, I think, S. Maweana or S. corsicana, and I think the plant must be a hybrid; at all events I have over and over again failed to raise a single plant of S. Wallacei, the seeds being bad." Mr. Lindsay proceeded:—"S. Forbesii is American, my Willkommianum is undoubtedly Spanish. The 'Index' gives S. Camposii as a synonym both of this and S. Wallacei, which is simply absurd." The late Reginald Farrer, in his *English Rock Garden*, discusses this question, but does not clear up the point of parentage in a satisfactory way, but, as he states, "dates make it unlikely that S. Maweana had any share in it, and one of the most probable parents is S. trifurcata . . . . . ." S. × Wallacei is said to have been growing at Kew in 1867; whereas S. Maweana was not introduced until 1869."

Personally, if we must dismiss S. Maweana, I am of the opinion that Farrer's suggestion of S. trifurcata does not seem far wide of the mark. By the way, that gifted writer disposes of the name of S. Camposii as a synonym of S. Wallacei, Merror, which originated through the *Botanical Magazine* having figured it as S. Camposii, which species was not at that time in cultivation. *Dumfries.*

ANTHEMIS CUPANIANA.

AFTER last winter, the revision of one's beliefs respecting the hardiness of old and new plants has to be in two directions—one of a cheering kind, resulting from the survival of plants of doubted hardiness, and the other, much less cheerful, in fact, rather depressing. The first includes the treasures which have survived, and the second those which we have trusted for hardiness and have found to be too tender for such seasons as the past winter.

I have grown Anthemis Cupaniana (montana) for at least twenty-four years and have hitherto found it withstand all the winters we have experienced until this last one. Now, I am viewing with grief and disappointment what was once a noble plant of this Chamomile, but which is now a mass of withered branches and leaves, which covered with beauty the boulder over which it hung. No longer is that boulder veiled with silvery foliage and beautified with the added charm of the pure white flowers, and the plant is evidently to be written down among the departed glories of the garden. This is contrary to one's former experience and in direct contradiction to the teaching of works on hardy flowers and of catalogues. According to Farrer, it is "perfectly hardy." He adds, "it came under a suspicion of tenderness which has by now been utterly dispelled." Of course, its Italian origin has not been too reassuring on this point, but this is not always a sign of tenderness, as we have very many Italian plants which are quite happy in this land of ours. A. Cupaniana, in my opinion, should have a light soil and a sunny position.

PENTSTEMON DAVIDSONII.

CONSIDERABLE controversy has centred about the name of this little shrubby Pentstemon, and the confusion resulting therefrom in nurseries and private gardens is very great. Personally, I am inclined at present to continue to use that of P. Davidsonii, with which Farrer appeared to be content, although his acceptance seemed to be partly because he did not admire the colour of the flowers and that he considered the name in this case was negligable. P. rupicola, P. Menziesii and P. Douglasii appear to be the other titles most commonly used for it, but I think P. Davidsonii holds the field in point of general acceptance. Farrer's colour description is certainly far from enticing. He states it has: "fleshy, little, oval-toothed leaves of bright green, clothing the stems of a fat and minute branching shrublet of an inch or two in height that end in baggy bugles of a ferocious red-mauve, most terrible and breath-taking to look upon in the sun." I do not think all who grow P. Davidsonii will agree with this *in toto*, as a good deal depends on the surroundings. With plenty of greenery about, the hardness of colour is modified, and the leaves of the Pentstemon in themselves are so fresh and green that they assist in this direction. While P. Scouleri, although not killed, suffered severely in a similar position, P. Davidsonii was perfectly unscathed during the past winter growing on the top of a low double wall, flanking a flight of steps and well exposed, with a south-west exposure. It will also thrive in a moraine without lime. *S. Arnott.*

VITTADINIA TRILOBA.

OF such easy cultivation that in many gardens it has naturalised itself, Vittadinia triloba, better known as Erigeron mucronatus, is an invaluable subject for the summer adornment of the rock garden. It is also extremely useful for furnishing the crevices of rock walls, or of stone-flagged paths, and may even be employed effectively in sunny borders or as edgings to paths, for, provided it has a sunny position and soil not so rich as to encourage luxuriant growth, this dainty little subject will flourish and produce its Daisy-flowers, opening pink and changing to white with age, in unbroken succession throughout the summer months, the first having already opened with me.

V. triloba is perennial, and may be increased by division or from seeds, which are usually produced quite plentifully; when once established, this dainty subject will seed itself about, so that in a very short time colonies will have sprung up about the single parent plant, to be transformed in the summer into a cloudy mass of pink and white. And, although V. triloba scatters itself about so freely, it seldom infringes upon the livelihood of its neighbours, for there is no suggestion of coarseness about its appearance or mode of growth, and it will ever retain its unassuming nature, growing in close vicinity to other plants, yet, withal, in a companionable manner.

It is neat and compact when not in flower, and when in blossom forms a loose, open mass of branching stems some nine inches high, the numerous, small, Daisy-like blooms presenting every intermediate shade between white and deep pink. Comparatively poor soil would appear to suit it best, and it cannot have too much sunshine. *M. W.*

HARDY FLOWER BORDER.

ZAUSCHNERIA CALIFORNICA VAR. MEXICANA.

THERE have been many disputes regarding Zauschneria californica and the species or variety mexicana, and forms such as splendens, and it would be both useless and unwise to make any definite statements here without full possession of the facts. Suffice it to state, the Zauschnerias are natives of sunny California and Mexico, are popularly termed Californian Fuchsias or Humming Birds' Trumpets, and are indispensable rock garden or border plants, although not generally considered to be hardy.

In gardens, Zauschneria californica is herbaceous, bearing each year a multitude of twelve-inch, fragile stems, set with small, narrow, slightly woolly, grey-green leaves. In summer and autumn a fair proportion of brilliant, reddish-orange or vermilion, tubular flowers is usually borne, hanging pendant from the stems.

Zauschnerias are generally given some protection in winter, yet three specimens have lived out-of-doors for three years in a north-midland garden without such precautions having been taken. Even the severe weather of the past winter has had no ill-effect, beyond the usual cutting of the plants to the ground; new growth has since been made. These are of Zauschneria californica var. mexicana, as sent out by a well-known firm. One is planted at the side of a path, and at the base by a large rock facing south, while the other two are in deep, vertical rock-clefts with a south-east aspect. The compost for all three is the natural rather worn-out garden soil, plus abundant coarse limestone chippings. Curiously enough, none of the plants has yet flowered, although each year they have come up again stronger than ever. However, as they are now well-established, it is to be hoped that abundant blossom will be produced this year, given a sunny summer and autumn. The catalogue description is that of "a twelve-inch mass of flaming scarlet." Another consignment of Z. c. var. mexicana, received from an Irish nursery of note, was planted at an unfavourable time; they were frozen hard in the ground and perished soon after arrival.

In exposed gardens it is usual, and indeed advisable, to propagate Zauschnerias every year, so as to keep a stock under glass through the winter in case of loss among the plants outside. Increase may be effected by division in spring, or by cuttings of side-shoots in late summer, and pure silver sand or a very sandy compost will be found a suitable rooting medium. *L. B. C.*

VIOLAS.

THESE extremely useful plants are increasingly popular among gardeners and other flower lovers, and deservedly so. Not only are they hardy, but the flowers last a long time, and the plants are adaptable to almost any position.

Ground intended for the reception of the plants should be well dug and have some old manure, a little bone-meal, and a dusting of old soot added. In order to assist root growth and thus build up plants to withstand drought, it is well, after placing the Violas in their permanent quarters, to keep all flower buds picked off for a week or two.

The uses to which Violas may be put are many. In the garden they make capital edgings to Rose beds or the herbaceous border; and they will thrive well in shady places. They are also useful for covering bare spots, and for "carpets" to taller growing plants. A small circular lawn-bed containing a weeping standard of Rose Lady Gay surrounded by White Swan or Newton Mauve Violas looks well, and lasts well for a long time. As beds of distinct varieties, on lawns, a pleasing effect may be obtained, and, perhaps, in this way the Viola is seen at its best. For indoor use, such as for table decoration, flowers placed in low receptacles are especially pleasing.

Violas delight in moisture and during hot weather a good watering twice a week is desirable. On light soils it will be found advantageous to afford a mulch of manure. In growing Violas for exhibition one needs, of course, to go to a little more trouble. One of the best media in which to plant is Surrey loam. Each plant needs a foot of space, the stems being restricted to an average of two to each plant, and the buds to one on each stem. Given occasional waterings with liquid manure, and clear waterings between, the plants will do well and give large blooms.

A selection of varieties for exhibition includes Rena Loan, Edith Melville, Criss Littlejohn, Drummer Wilson, Kathleen Condry, Mrs. A. Stevenson, Moseley Perfection, Moseley Ideal, Nurse Cavell, Pink Stripe, Robert Black, C. Blair, Andrew Jamieson and Clifford Holden.

For garden decoration, in addition to many of those named above, the following are suitable :—Bullion, Blue Cloud, Fred Williams, Maggie Mott, Newton Mauve, Moseley Perfection, White Swan, Bridal Morn, Mauve Queen, Queen of Whites, Purple King, Admiration, Golden Sovereign and Rosy Morn. *James A. Paice, Copseham, Esher.*

THE BREAKING OF TULIP SPECIES.

It has generally been supposed that the change known as "breaking" is confined to the garden Tulips and does not extend to the species. In my recent book on the Tulip, I wrote: "Breaking has not been recorded among the true species," but in the week of publication evidence was obtained to deny that statement.

In the first place, Miss D. M. Cayley, who in 1928 succeeded in transmitting the presumed infection that causes breaking, by grafting together broken and unbroken bulbs, repeated the method and grafted broken bulbs upon normal bulbs of T. Eichleri and T. Greigii. Most of the bulbs of T. Eichleri thus made to grow in living contact with a broken variety broke this season, as did two bulbs of T. Greigii. The breaking was less marked than with the garden varieties in that the perianth segments showed no streaks of the yellow ground. Instead, they were marked with flecks and streaks of a darker scarlet, a form of variegation which I have seen in some broken forms of the English Tulip. The foliage, however, possessed the characteristic mottling of dark and lighter green; the size both of the flower and of the whole plant was reduced as far as could be judged from the small numbers experimented upon, and there appeared to be some tendency to develop torn and laciniated edges to the petals.

Further, a careful examination of the stocks of Tulip species grown at the John Innes Horticultural Institution showed that specimens of several species had broken spontaneously in a somewhat similar fashion, where no breaking had been observed last year. Undoubtedly, 1929 is a "breaking year" at Merton. Garden varieties grown here last year have broken wholesale; in many cases they were least desired so to change. Perhaps this may be connected with the heat and the prevalence of aphis last season, but the agent transmitting the presumed virus of breaking has not yet been definitely ascertained. Among the species in which breaking has been observed this season are three, T. suaveolens, T. praecox and T. armena, which are of doubtful status as species. Each of them has been regarded by some authorities as an early stray from gardens, and possibly only a variety within the garden Tulip complex.

But of good species, the following have broken: T. Kaufmanniana, T. Clusiana, T. Tubergeniana, T. Orphanidea and T. Batalinii. In all these cases the foliage showed the characteristic mottling; usually the colour change in the perianth segments was a flecking with a darker colour, but in T. Clusiana there were white streaks in the crimson on the backs of the outer segments, similar to the usual form of breaking in garden Tulips.

It may thus be concluded that breaking is common to all the Tulip genus and is not confined to the garden forms. It is a pity, because the species are not improved thereby, but are rendered distinctly poorer and less brilliant. Those who maintain a collection of species would be well advised to eliminate the broken forms whenever they appear, so as to minimise the chance of the infection being carried over.

As a further demonstration that the capacity for breaking runs throughout the Tulips, I have this year verified the fact that self yellow Tulips will break. Among my seedlings are several that open a light primrose-yellow and gradually bleach until they are practically white when mature. Some of these have become very distinctly broken as regards the foliage, and close examination of the perianth segments shows that the yellow colour is now disposed in stripes and streaks with a white ground between. One or two of them show also an occasional thin line or streak of red. In these seedlings the colour is the second flavone yellow of the Tulip, which is confined to the cuticle and to which is due the "shot" effect of certain varieties like John Ruskin or Cardinal Manning. On breaking, this faint yellow segregates into streaks, just like the anthocyanin red or purple segregation when the ordinary coloured varieties break. But I have observed the same breaking in Inglescombe Yellow which has a true yellow ground, *i.e.*, a plastid colour located in the mesophyll. A broken Inglescombe Yellow shows, on close examination, two slightly different shades of yellow disposed in stripes and streaks, and here and there a thin, defined line of red, as though a very small amount of crimson anthocyanin colour, which had been invisible in the normal breeders because it was uniformly diffused over the whole segment, had been gathered together into one or two small areas. Careful search will reveal similar appearances in other yellow self Tulips. *A. D. Hall.*

ARTHROPODIUM CIRRHATUM.

The genus Arthropodium consists of ten species scattered over Australasia. Both New Zealand species are endemic, and A. cirrhatum is the more noteworthy of the two. The Maoris know this plant as the Renga-renga, but among Europeans it is more often referred to as the Rock Lily, and sometimes as the Renga Lily.

Arthropodium cirrhatum, Br., which is synonimous with the Anthericum cirratum of Forster, is figured in the *Bot. Mag.*, t. 2,350. This attractive plant is a tufted perennial herb, producing numerous fleshy roots which facilitate division, always an easy method of increasing a stock of plants. Growing to a height of from one to three feet, A. cirrhatum (Fig. 214) produces a large number of rather fleshy, light green leaves, which vary from eighteen to thirty inches in length and are usually about two inches broad. They are flaccid, sub-distichous at the base, lanceolate in outline, and tapering gradually to a long, narrow tip. The numerous small, white flowers are borne in much-branched panicles, some of the branches of which attain quite nine inches in length. Each primary branch is borne in the axil of a broad, foliaceous bract.

The dianty white flowers are very showy in the mass, each being about an inch in diameter, with a typical Lilaceous calyx and corolla, and provided with stamens of exceptional beauty. The filaments are thread-like at the base, and just above the middle they bear a thickened, woolly appendage which is produced downwards into two fluffy tails, resembling tiny, rosy-pink or orange "bottle-brushes."

Its native habitat is the North Island, and the northern half of the South Island of New Zealand, where it is often fairly abundant on rocky cliffs near the sea, and for this reason it should become a welcome and useful member of seaside gardens in the south and west of Britain.

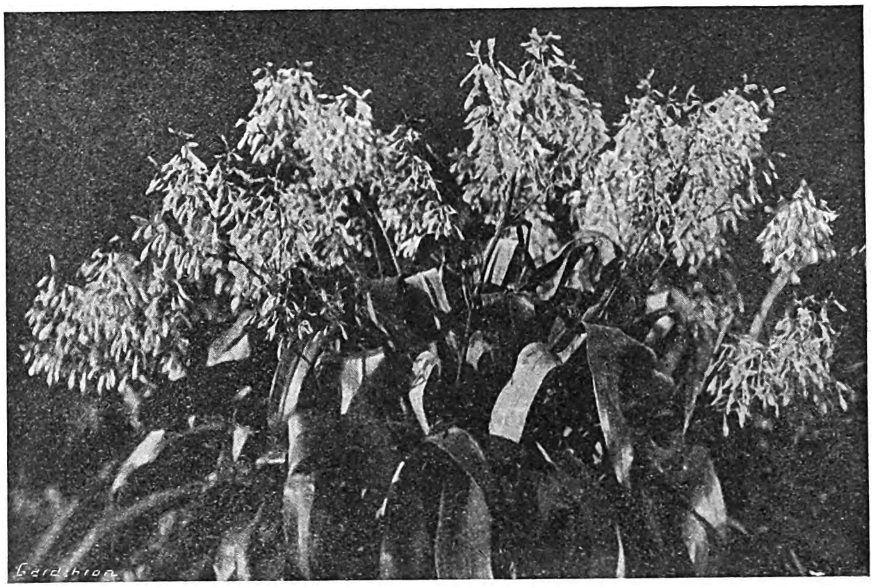

FIG. 214.—ARTHROPODIUM CIRRHATUM.

Of the easiest culture and growing in almost any soil, provided a fair supply of water is available during the flowering season, it flourishes when exposed to full sunshine, and I have it growing rampantly under Araucaria imbricata, a situation in which few notoriously shade-loving plants can be persuaded to feel at home.

A. cirrhatum has been cultivated for many years, and although introduced into Britain about 1821, it never seems to have enjoyed a wide popularity, because it is seldom seen in gardens, nowadays, which is rather surprising when one considers the merits of this plant and the accommodating nature of its demands.

This most adaptable subject will thrive in any fairly mild climate, where it can be grown in the open herbaceous border, or planted in pockets in a moderately large rock garden. It could be used successfully to furnish lawn vases, etc., instead of the overworked Pelargoniums, which are so much in evidence for that class of work. The bright, evergreen foliage is not unattractive, and during the flowering season the pleasing white flowers, which are borne in great showy masses, are very attractive. Where it would not prove hardy it could be used in the conservatory, either grown in the beds, or potted and grown in cold frames. If potted up it should be allowed to grow naturally with no attempt at forcing by stimulants or the aid of artificial heat. This interesting plant may be readily increased by means of seeds or offsets, both of which are produced freely. *A. W. Anderson, Dunedin Botanic Gardens.*

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THE PLANT-LIFE OF THE BALKAN PENINSULA.

THIS volume* is important, not only for its intrinsic value as a study of the plant geography of the Balkan Peninsula, but also as the first-fruits of a series of monographs dealing with vegetation and plant distribution. There has hitherto been nothing in English comparable with the series *Die Vegetation der Erde*, edited by Professors Engler and Drude. It was in that series that Dr. Cockayne had to publish his work on the *New Zealand Flora*. This reproach is now to be wiped away, and we welcome the series as well as Mr. Turrill's book.

The book is an outcome of the war of 1914-1918. Twelve years ago the author was with the Salonica army. His interest in the rich and significant flora of Macedonia was roused, and subsequent visits to areas which in 1917 would have been sadly "unhealthy," much herbarium and library research, and the study at Kew of living Balkan plants, have been the equipment for his work. He has collected and digested for it a vast quantity of material—material difficult to get and intractable to arrange—with great patience and thoroughness, and has been able to arrive at general conclusions with regard to the history of the flora and vegetation of the Balkan peninsula.

The plant life of the peninsula is, of course, much less well-known than that of the more accessible regions of Europe. Remoteness is not the only deterrent; does not Mr. Turrill devote space to the indirect influence of brigands upon it? It is, however, so rich, particularly in its large number of unique forms, that it rewards particular attention. In the north, the central European flora comes down into the region; from the south comes up that of the Mediterranean; and on the east, the islands of the Aegean are stepping-stones from Asia Minor, and are, in fact, the remains of a geologically recent land-mass. Across this, as on a highway, species travelled both eastwards and westwards, but mainly westward and along two routes, the northern through Thrace to Bulgaria and Macedonia, and the southern through Crete to Greece.

The earlier part of the book is a general description of the peninsula, its physical features, divisions, geology, soils and climates. For the purposes of his study, the author divides the region into sixteen districts, and on this basis works his analyses and classifications. The flora is first examined in a broad way with regard to its forms, flowering periods, habitats and zones of altitude, and then with regard to the plant communities and their stages of succession. A long chapter on the influence of man, especially in forest destruction, follows. In another place, Mr. Turrill writes of the "enormous changes" caused by this exploitation, and pleads for the thorough botanical exploration of such areas as the Rodope massif and Strandja Planina as "decidedly more urgent than that of western China or tropical Africa." Might not such a scheme be organised next year as a main work of the International Botanical Congress at Cambridge? Commercial development is not neglecting the Balkan Peninsula, and there is the danger that these primitive areas may be lost for ever.

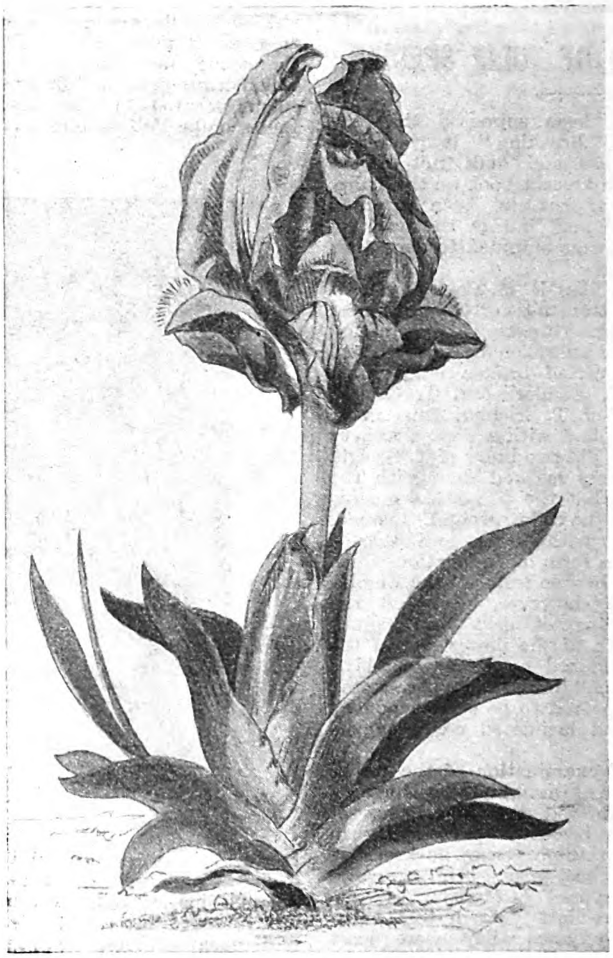

FIG. 215.—IRIS MELLITA (PUMILA) FROM AHLEM DAGH.

We then come to a summary of the distribution of a series of the seed-bearing plants of the peninsula. There are 126 families of such plants, with 6,530 species. Each family is dealt with in order, and notes are given of the occurrence of species in the districts. Then each of the districts is dealt with and the information just given is summarised for it. This leads to a tentative scheme of division of the Balkan peninsula into natural botanical regions. This is "proposed as a result of ten years' studies," but with the reservation that it will need modification and sub-division with further investigation. This scheme gives sixteen regions in six main groups, and provides a valuable framework for study; a map illustrates it. It is succeeded by a chapter, the longest in the volume, in which the author examines the connections of the Balkan flora with that outside the peninsula—or, rather, he examines the distribution within and outside the peninsula, and from the results of his lists seeks to establish the connections.

This is followed by what, to a reader mainly interested in horticulture, is the most alluring chapter in the book. It deals with endemic (including relict) species, *i.e.*, species whose known distribution is entirely within the peninsula and the islands. A table of the genera sets out their occurrence according to the plan of districts on which the book is arranged, and a second table gives the occurrence of those which are found in one only of the districts. Maps help to the realisation of the distribution, and notes are added on each family. The importance of all this can be gauged from the fact that of the flora of 6,530 species, 1,754 are endemic. Detailed as Mr. Turrill's work in this department seems, what is given is only a summary. The amount of investigation that lies behind it may be estimated from a full account of the twenty-five endemic Compositae of Crete, which he gives to exemplify his methods. The majority of the Balkan endemics have, he considers, originated as species within the Balkan area. A few, about sixteen, of the endemics are, however, of special interest as survivors from an older flora than that prevailing now—they are either actually old as species, or they represent old types. These, and with them other relict species which occur outside the area as well as within it, are discussed at length. In this group, with the distinction of a map all to themselves, appear the Balkan Gesneriaceae, the pride of the shaded clefts of the rock garden, the Ramondias and Haberleas. Mr. Turrill notes, as the most interesting parts for the study of relicts, northern Albania and districts around, the Rodope massif, and the Caucasian-Pontic communities of eastern Bulgaria. He ends this section of his book with an examination of Dr. Willis's "Age and Area" theory as applied to the peninsula, and the book

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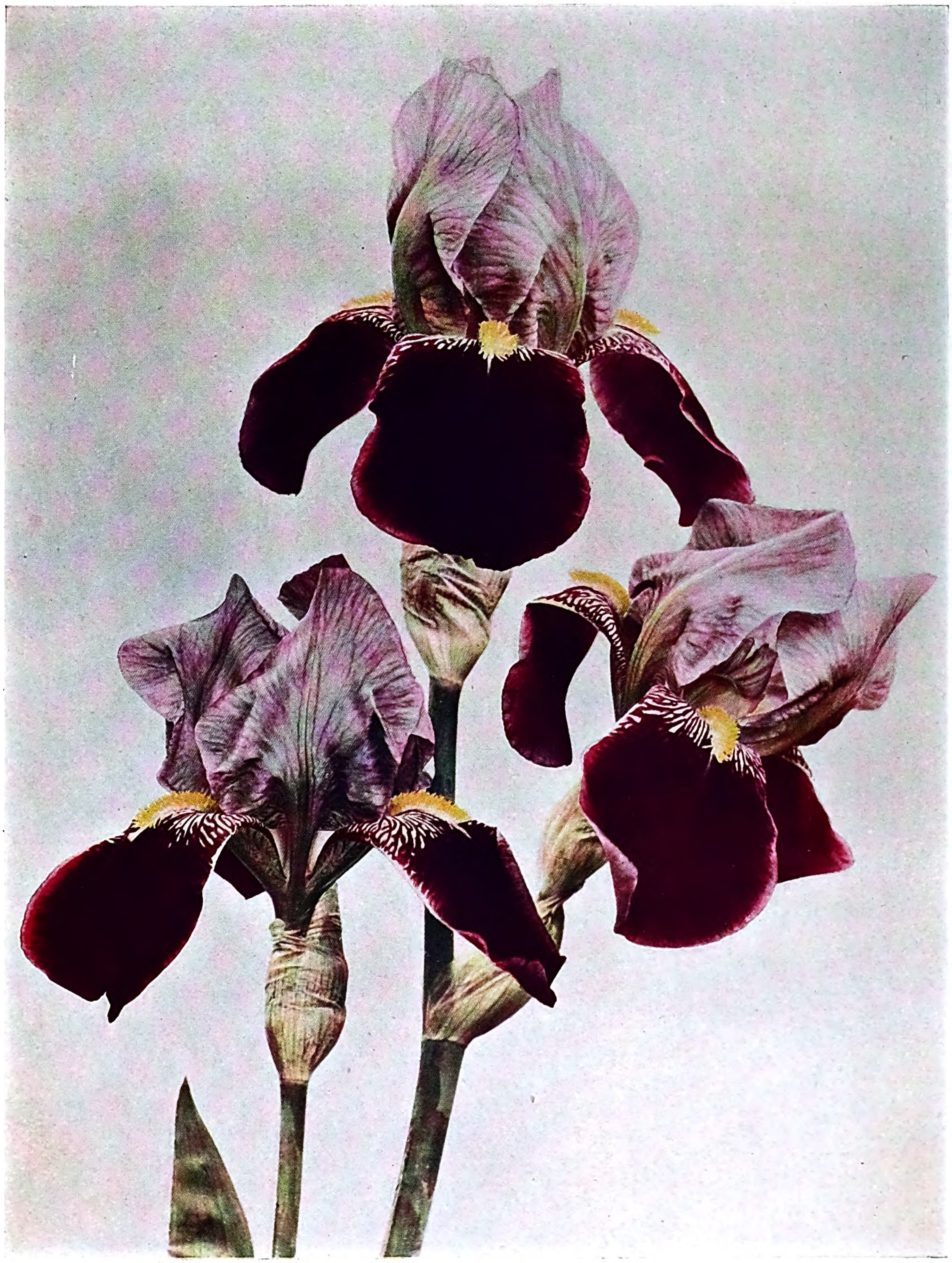
* *The Plant-Life of the Balkan Peninsula.* A Phytogeographical Study. By W. B. Turrill, M.Sc., F.L.S., Assistant in the Herbarium and Lecturer in Botany at the Royal Botanic Gardens, Kew. Oxford: The Clarendon Press; price 30s. net.



IRIS BRUNO.

itself with a modestly cautious summary of the floral history as deduced from the data. Mr. Turrill indicates lines of future investigation, and, doubtless, his collection of facts will be amplified and his general conclusions may be modified here and there, but in grasp of detail and width of view his work maps the field.

One small matter. The author refers to the inferior Apples, and our own opinion on the spot was that good Apples could be grown if only suitable varieties were introduced. But he does not mention the Quince as cultivated, except in Crete. Our recollection of excellent Quinces in the Monastir neighbourhood is vivid, and as a matter of fact, trees of the Serbian Bereczeki ard Vranja Quince can now be obtained in England. *W. R. J.*

COLLECTING IRISES.

In my early days, although I appear to have wandered into countries and mountains off the beaten track of travellers, my interests lay in other directions, and if I collected at all, it was only odd plants which at the time attracted my attention. I am, therefore, conscious that the observations which I have to offer, in response to a request, must be limited to a comparatively small area.

IRIS PUMILA AND ITS VARIETIES.

Anyone given to wandering in south-east Europe is sure to be attracted by this very small and fascinating Iris, with its several variations. It has a wide distribution, extending from the Adriatic to the Black Sea coast in the north, and throughout Greece to the Aegean Sea in the south. It crosses the Bosphorus, and is found on the hills in the neighbourhood of Constantinople, as well as on the Dardanelles peninsula. Although the name is common, the true dwarf I. pumila is seldom met with in gardens, and is difficult to cultivate. The varieties usually found in catalogues are hybrids with I. pumila parentage, and are plants of easy cultivation and very floriferous. Fig. 216 represents the true dwarf Iris pumila, from plants collected by one of my sons in 1916, and in after years by myself in the abandoned trenches on the hills overlooking Lake Doiran in Macedonia. Originally I had the three colours of this variety, a soft slaty-blue, a yellow, and a claret. I appear to have lost the two former, and the illustration represents the remaining claret-coloured form. The feature of the flower is its beard of closely-set, white hairs, tipped with dark blue; these stand out conspicuously on a shapely, reflexed fall. True to the type, it has practically no stem, and a long perianth tube. The spathes are almost membranous and papery; in the early stage of growth the leaves of my "pumilas," as they push up from the rhizome, are scimitar-shaped, but, after the flowering period, lose their original shape and develop an upward growth, increasing in size until they attain a height of seven or eight inches. When the seed capsules are ripe they are to be found sessile among the leaves, as Mr. Dykes pointed out when he discovered a seed-pod sitting on the ground at the base of the leaves in a plant which I had crossed with an I. germanica variety. In my former garden, only fifty feet above sea-level, I was more successful growing it out-of-doors than I am here at an altitude of 450 feet.

This Iris has afforded me another interest. It was the means of introducing a variety of Anemone blanda which has given me great pleasure, when in the early days of the year our gardens are wanting in colour. At the base of one of the rhizomes sent home in 1916 by my son, when this Iris shed its leaves on the approach of winter, I discovered a small Anemone corm wedged between two rhizomes. It was detached, carefully nursed, and when it grew to be about three inches across, I cut it into pieces, each with an eye. In that way my stock was increased, and all friends who have it, pronounce it meritorious. It blooms in various places in the garden, from early March to the end of May.

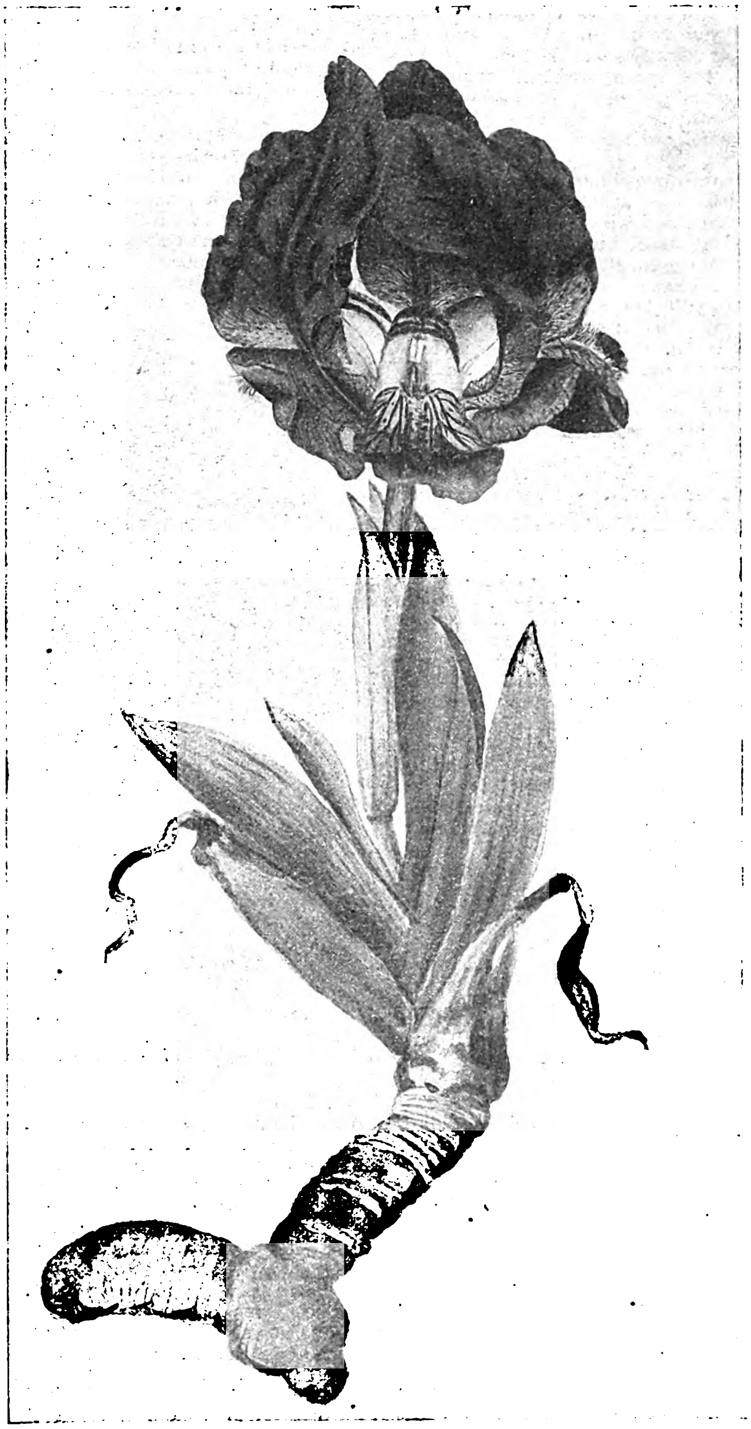


FIG. 216.—IRIS PUMILA FROM MACEDONIA.

Iris p. var. attica is another of the small type of this species collected on Hymettus, near Athens, and also on the island of Salamis in the Bay of Eleusis, off the entrance to the Piraeus. I was advised to go there for this Iris; so, taking advantage of several hours before the departure of my steamer for Trieste, I visited the quay in the Piraeus early one morning, expecting to find it an easy matter to engage a boatman willing to take me to the island. Boatmen and sailing boats were there in numbers, but none were forthcoming for such a trip. At last, a bargain was struck with a young fellow and his partner, owners of a rowing boat. Once out of the harbour he confided to my interpreter that he was a refugee from Constantinople, which explained why he had been ready to venture a journey which the ordinary boatman considered too hazardous. We landed on a narrow point in that part of the island known as the "Cynosura" (dog's tail) where, amid a very rocky surface, this variety attica had been flowering in profusion; the blooms are white, with a mixture of violet, and have all the characteristics of the type.

Living as it does at sea-level, I find it short-lived out-of-doors; on the other hand, the same Iris from an altitude of 2,000 to 3,000 feet on Hymettus, may have a better constitution. In this part of England, the only hope of keeping my plants alive is to grow them in frames. I have been astounded to see the successes of this dwarf "pumila" in Sir William Lawrence's garden, planted at the foot of the wall in the hottest part of the garden; but more astonishing still is the success attained by Dr.

Guiseppe, in Felixstowe, where he grows and multiplies this Iris on the edge of a well-drained peat bed which may receive a flow of water when needed from a moraine on a higher level.

IRIS MELLITA.

Fig. 215 represents I. mellita, another dwarf "pumila" which has come my way, collected on Ahlem Dagh, a hill inland a few miles from the Bosphorus on the Asiatic side. I have also the same form from the deserted island of Andreas, in the Sea of Marmora. Here we have a pumila with firm and rigid spathes. As in I. pumila, the stem is practically non-existent. It has sharp keels to the spathes which enclose the buds. The flowers are mostly of a smoky and dirty yellow, although sometimes one may come across a smoky shade of purple or claret, or a mauve form.

Iris m. var. rubro-marginata is stated to have come from Scutari, opposite Constantinople. I have not collected this variety, although I have many times been there, but I have it in my collection and find that of all the "pumilas" of the Balkan peninsula it has the soundest constitution. It is easy to cultivate and flowers readily. The young leaves, and particularly the spathes, are edged with red, but otherwise this form differs in no way from the typical example of the species. Because of its hardiness, I sometimes wonder whether the country of origin of I. m. var. rubro-marginata has not been confounded with the Scutari of Albania.

It will be observed that the foregoing notes on the "pumila" Irises have reference to those sorts which belong to the southern area of their distribution. Those from the northern area are larger and sounder in constitution. I have several of the pumila group grown by the late W. R. Dykes which came from the northern area, all typical examples, with their long perianth tubes and scarcely any stems; they are all good-natured, increase readily, and are very floriferous. If we compare the three Irises illustrated on Plate XXXII in Dykes' *The Genus Iris*, with the life-size illustrations (Figs. 215 and 216), which accompany these notes, it will be seen that those from the southern area of distribution are the smaller, and I am, therefore, of opinion that it is because they come from warmer climes that they are less likely to withstand the climate of Kent at an altitude of 450 feet.

They appear to me to come between the very dwarf pumila and the Chamaeiris groups.

IRIS REICHENBACHII.

This is figured in *The Genus Iris*, Plate XXXIV, and has many synonyms. It has sharp keels to the spathes which enclose the buds. Here the stems are six to ten inches long, with relatively short tubes, only one-and-a-half inch long. This form was collected by me on the slopes of Mount Olympus, Thessaly, at an altitude of 3,000 to 3,500 feet. My plants were of the yellow form, with a tinge of green at the base of the segments. I find the climate of Sevenoaks very unsuitable for this Iris, with the result that I now give the plants frame protection in the winter.

THE GERMANICA GROUP.

In my wanderings, I have come across several varieties among the tall-growing species. I will take, to begin with, the commonest of all Irises, the so-called I. germanica, of which Kharput is a fair example, named originally by Sir Michael Foster after a town in Armenia from which he received plants. In 1907 I collected plants in Kashmir, and in more recent years I received rhizomes from Kirman, in South Persia, which, on flowering, prove, so far as I can judge, to be the same as Kharput, and are strongly scented. As I write, both varieties in my garden are throwing up their bloom stems, and to all appearance are identical. Recently, in the high Atlas, Morocco, as we passed through villages above an altitude of 6,500 feet, the terraces under cultivation were all edged on the outer retaining walls with a dark blue Iris which I took to be another Kharput. I got, however, an impression that the dark violets were of a redder tone of violet, which may have been due to the brilliancy of the atmosphere as compared to our English climate. As my party mounted higher and out of reach of villages and cultivation, again we came upon patches of the same plant, and so it continued to perhaps a mile beyond the last village, Tachdirt, 7,500 feet, in the valley, and within one-and-a-half hour of the pass, Tizi Itbirani, on the divide of the main Atlas range. The slopes on the opposite side of the valley facing north were snow-clad.

Under such circumstances we may surely surmise that such a plant is indigenous to the soil; but then I am reminded that the vitality of the Iris rhizome is such that it will grow in almost any position, and withstand journeys that are almost invariably fatal to more slender plants.

Hooker and Ball visited this country in 1871, after the flowering season; they collected the plant and classed it as a germanica, but the question which puzzles me is how came these plants on the bare hills of Morocco; were they escapes from the cultivated areas, or were they originally introduced from some such country as Arabia, by pilgrims visiting Mecca? This is the usual theory, to which is added the belief that the white-flowered varieties were commonly planted on graves. This custom I can appreciate in some Mohammedan countries, but here in the high Atlas, among the Berbers of the hills, their cemeteries are of the meanest, without any vestige of head-stone or plant adornment. Their religion is no better, and I cannot believe that such people as I saw ever made pilgrimages to Mecca. The very wide distribution of this Iris forms a very puzzling subject.

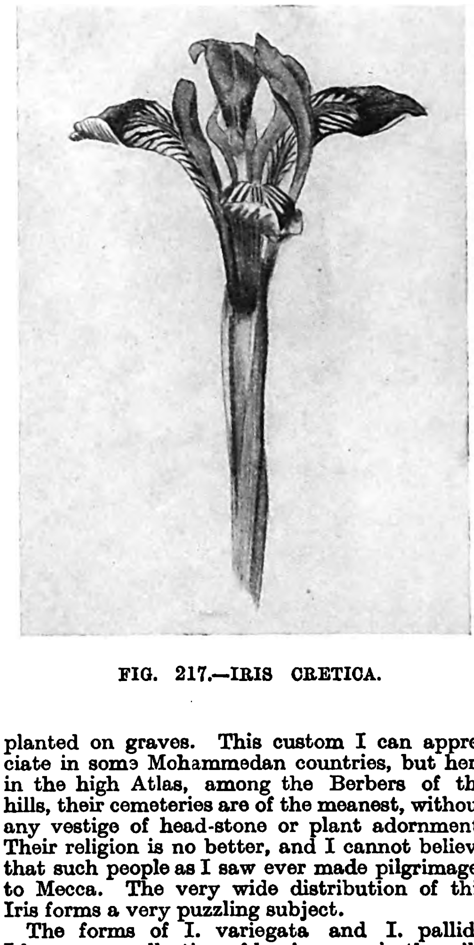


FIG. 217.—IRIS CRETICA.

The forms of I. variegata and I. pallida I have no recollection of having seen in the wild state; on the other hand, I. albicans, I. germanica, and I. florentina I have collected in many places far and wide, including a white form of I. germanica which lives in Crete, where, in an open, wild country, a large colony was luxuriating in the shade of the branches of a Plane tree, having as a background Styrax officinale. On one occasion, in the south of Crete, I happened to be staying the night in a native hostel, and learning that the Bishop of the diocese resided near by, I felt it my duty to call upon his Holiness. I was graciously received with the usual offering of raki, and loocoom, washed down with water. I was asked what brought me to Crete, and when told that I was plant hunting, I was immediately taken into the Bishop's garden, where, among other plants, under the broken shade of fruit trees, I beheld a mass of upright Irises in full bloom and in perfect condition. They were of the variety Cypriana, and measured five-feet four-inches in height, with stout and rigid stems needing no support. I thought of my friend George Yeld, the raiser of Asia, a beautiful, sweetly-scented Iris of Trojana parentage with branching stems, but weak in the legs. I took away rhizomes but, as with I. mesopotamica, another of the Palestine Pogoniris, they have failed to produce flowers. Not so a form of I. Ricardi sent to me from Tarsus, which has behaved itself, some years flowering very freely, although last year this was one of the varieties among several which failed me. Such are the chances of trying to grow species from hot countries.

I. kashmiriana, another germanica, and one which belongs to the Indian group of Pogoniris, was collected on this same journey. It was found growing near and among the ruins of the Sun temples of Martand (700 A.D.) in a sunny prospect commanding the finest view of the famous valley of Kashmir, and perhaps in the world—the "Paradise of the East, with its sacred streams and glens, its orchards and green fields, surrounded on all sides by vast snowy mountains whose lofty peaks seem to smile upon the beautiful valley below."

This is a very distinct Iris, but a bad doer in this country owing to some weakness in its constitution. Some seasons I have flowered it, when, as we know, it has milk-white flowers, with some slight purple markings on the blade of the falls, and exceptional fragrance. It has a tendency to increase its growth of rhizome, without any corresponding root increase, and after a few years peters out. Foster got it to seed, and raised plants, one of which came to be known as Foster's Kashmir White, and is still in the front rank of white Irises.

IRIS UNGUICULARIS.

I. cretica is a variety of I. unguicularis, and my introduction to this very choice gem came about in an odd manner. I was mounted on a mule, travelling upwards in the early stages of an ascent on Ida, in Crete. As I rode along, following a leader, always intent on looking out for plants, I suddenly found myself entangled in the branches of a tree which unseated me. I fell into a tussocky clump of what appeared to be a coarse grass, and then discovered to my intense delight the flowers of a small Iris, which turned out to be no other than the Cretan variety of I. unguicularis. Later on, I came upon many more plants, invariably growing in sheltered places at an approximate altitude of 2,000 to 3,000 feet.

The illustration (Fig. 217) is from one of my Cretan plants, which has been out-of-doors all the winter; its flowers are splashes of several shades of rich Burgundy wine-red on a white ground, with orange at the base of the falls and beard. The leaves are glaucous, of a leathery texture, a tenth-of-an-inch wide at the base, and tapering to sharp points at the tips. There are two sizes, from six to ten inches high. Although I had some few blooms this spring, my clumps were badly punished by the severity of the winter, and I feel sure that I shall only save this variety by frame protection.

In concluding this note, I would like to state how very aggravating plant-hunting on horseback is. The eye is carried forward with the motion of the animal. Many small objects are too imperfectly seen to convey a definite image. To dismount is often to no purpose, and stops the cavalcade, and so it comes about than many an interesting plant may be missed altogether; but, apart from the handicap of this method of plant-hunting, one may readily mistake the grass-like growth of this Iris for coarse Knot Grass. Hiatt Baker, who was with me in Crete in 1926, thought so until he found a seed-pod sitting almost on the soil at the base of a stem.

APOGON IRISES.

I. spuria, I. aurea and I. ensata, all three belonging to the Apogon section, were among my finds on the occasion of my visit to Kashmir. They all survived removal to England, which I regard to-day as remarkable since experience has taught me that they resent transplantation.

I. spuria figures in *The Genus Iris*, Plate xv, and grows to a height of four feet, and to all appearance is similar to the European form of I. maritima, found in the marshes near Hyères. I. aurea (Plate xvi), is a gorgeous deep yellow form which I have always grown with great success. The interest to me of this plant is, that in 1911 I received seeds of an Iris from Teheran which, on flowering, turned out to be I. aurea, both lots flowering on the same day, although natives of countries very far apart. I. ensata is a form, Dykes wrote, of wide Asiatic distribution from the Altai region to Shantung and Corea. In Kashmir the foliage is used as fodder, while in the neighbourhood of Kashgar it is woven into cord, and bunches of vegetables and of Grapes are mostly tied with it. I am reminded by Mr. Yeld of I. notha, another Asiatic form of I. spuria we found by the acre (in seed) on our way from the Evlak station on the Baku railway to the town of Nucha, which was our starting point for a mountaineering expedition into Daghestan in 1890. Professor Michael Foster raised plants from it, and Mr. Yeld stocked the Messrs. Backhouse nursery with seedlings.

I will close my notes with I. Sintenisii, Plate xvii, in *The Genus Iris*, regarded by Mr. Dykes as the I. spuria of the Balkans. It crosses the Bosphorus where, on the Giant's mountain, I collected plants many years ago. Again, in Ahlem Dagh, where in the month of May or June in 1925, the "maquis" of the hill was ablaze with red, white and blue flowers; the red and white were Cistuses, and the blue this variety of Iris. There are two sizes, nine to sixteen inches high, and they are very useful plants in a rockery, filling up the interstices of rocks with a mass of narrow, linear, dark green, shiny leaves over which appear brilliant, deep blue-purple flowers. They are very deep-rooted and very tenacious, and resent transplanting; their seed capsules add a feature to the winter clothing of a rockery, for they seed freely, but, like the small Sisyrinchiums, are inclined to be a nuisance to neighbouring plants. *G. P. Baker, Sevenoaks.*

TALL BEARDED IRISES FOR THE SPECIALIST.

THE tall, bearded or June-flowering Irises are notably plants of easy culture and not exacting in the matter of special treatment; and as such, the section has claimed, and is claiming more and more at the present time, the attention of garden lovers.

As in all other branches of horticulture, however, the hybridist is taking an increasingly important part, and in the search for flowers of large size, produced on tall, branching stems, an element of instability has been introduced into the race of tall, bearded Irises. Hence, we occasionally hear nowadays, that certain of the June-flowering Irises are not hardy, and this is generally associated in the minds of enthusiasts with the name of Iris Ricardi.

That there is a certain amount of truth underlying such statements cannot be denied, but a clearer understanding of the circumstances under which they have arisen, should do much to allay the fears of Iris enthusiasts.

It was not until about the year 1890 that a marked improvement in the types of June-flowering Irises began to show itself, and this may be attributed to the activities of the late Sir Michael Foster who, about that time, began to produce Irises of tall, branching habit, which were the result of the use, in hybridising, of an Iris which he received in 1888 from Cyprus, and which he called I. cypriana. This Iris, when crossed with I. pallida, produced such varieties as Caterina, Shelford Chieftain and Lady Foster, all of which made history in their time, and marked quite a new departure in tall, bearded Irises.

I. trojana arrived from the Troad in the year 1887 and, being a plant producing a tall, candelabra-like flower spike, at once recommended itself to the hybridist; this was much used, as was also I. Amas (syn. macrantha) in the production of taller and larger-flowered garden Irises. Such well-known raisers as Mr. Yeld and Sir Arthur Hort in this country, and firms like M.M. Vilmorin-Andrieux et Cie., in France, continued to use these three Irises (viz. cypriana, trojana and Amas) for many years in the production of new varieties, many of outstanding merit, and the question of hardiness never arose.

About the year 1912, however, a French amateur, namely Mons. Denis, introduced some particularly fine Irises, which he had obtained by the use in hybridising of I. Ricardi. This Iris was sent to Mons. Denis by a friend living at Avignon (M. Richard) who had received it from near Jerusalem, and after whom it was named. M. Denis sent a piece of this Iris to Sir Michael Foster, who named it Iris cypriana var. Ricardi. There is considerable confusion surrounding this Iris, but the long flexuous flower-stalk and big, straggly flowers seem to be common to both Iris Ricardi and I. cypriana. The late Mr. Dykes, however, considered it as probably a form of I. mesopotamica, which is found in Armenia.

M. Denis, who lived on the Mediterranean, near Marseilles, at that time, was well located to grow this Iris satisfactorily, but his beautiful hybrids, now in commerce, do not, as a whole, do themselves justice in our wet climate. As a native of the east, it is clear that I. Ricardi must have really hot summers, and it cannot be considered a "hardy" Iris in this country.

The best-known of the earlier Ricardi strain of Irises of M. Denis are:—Mdlle. Schwartz, M. Brun, Menetrier, Madame Durrand, J. B. Dumas, M. Cornuault, Leverrier, Gernez, Jussieu and M. Hubert. Given a warm, sunny position, many of these Irises will flourish in our English gardens, but they cannot be strictly classified as "garden" Irises, but rather as Irises which require special culture. In America, and particularly in California, a variety of I. Ricardi, called mesopotamica, has been used largely (notably by the late Mr. Wm. Mohr), and the resultant hybrids are quite outstanding for size of bloom and stately carriage, but these varieties, again, are not found hardy as a general rule in the eastern States of America, nor in England.

Succeeding generations of these very fine Irises will surely eventually cast off this tendency to tenderness inherited from their eastern ancestors, and when this has taken place we shall have still larger-flowered and taller-stalked Irises for the back of our Iris borders, than we have to-day.

In the meantime, however, we must be content to accept these semi-hardy Irises as steps in the ladder of progress, but, nevertheless, well deserving of culture by the "specialist." Those who would experiment with them must be prepared to afford them protection from rain (nothing else) through the winter months—it is impossible to choose too dry a position—and they will then be rewarded by flower spikes which will make walking sticks for their children, and be afforded the satisfaction of having grown successfully Irises which their neighbours have probably failed with! *G. L. Pilkington, Hon. Secretary, The Iris Society.*

IRISES OF THE BRUNO TYPE.

IRISES, especially the tall, bearded varieties, have always been a feature of the hardy garden in early June. Coming between the May-flowering Tulips and the Roses, they fill a great gap and are very welcome. The increased interest taken in them during recent years is mainly due to the introduction of so many fine new sorts. For this we are greatly indebted to that great raiser, Mr. A. J. Bliss. At the Wisley trials in 1915 I noticed many outstanding new varieties of his raising, and a year or so later I visited his garden, and subsequently introduced many of his seedlings. It is a remarkable fact that, working on the lines only of the older forms, he had succeeded in introducing a large number of outstanding varieties, particularly Dominion. This is his most notable seedling, and it stood out from all others—an epoch-making plant—stated to be a seedling obtained from Cordelia crossed with Amas, but so far in advance of its parents as to be a clear jump ahead. The remarkable quality of Dominion was such that I described it as the finest Iris I have seen and, even then, in 1917, at the hitherto unheard price of £5 5s. 0d., it was distributed widely, especially in America.

The coloured illustration given with this issue conveys the beauty and form of Bruno more accurately than words can express. It was in the summer of 1919—a few years later—that I first saw in Bliss's garden the seedlings of Dominion, that are now spoken of as the Dominion race—Dominion hybridised with another undisclosed variety, producing Bruno, Cardinal, Majestic, Glamour, Moa, Conchobar, etc., while another Dominion cross produced Titan, Tenebrae, Swazi and Duke of Bedford—a wonderful family. As much as Dominion was in advance of its parents so, again, Bruno and Cardinal were in advance of Dominion. Those who saw Bruno as exhibited by Mr. Geoffrey Pilkington at the last Iris show, will readily accord it a high place as one of the six finest Irises in cultivation. The size and breadth of its fall are remarkable, while the velvety texture is equally good. Bruno has one slight fault, namely, the standards are somewhat thin. This has been remedied in one of its daughters, Mrs. Valerie West, which is, in the opinion of some growers, superior.

I have a large number of seedlings from Bruno crossed with Ambassadeur and other fine types, and the coming weeks will provide a busy time as they open day by day. The plants of the Bruno type show great vigour, with very broad foliage and large flowers. The stems are very rigid and firmly held. Dominion's flowers were rather close to the stem. This is one fault that has been remedied in its children. To all who care for Iris breeding and the raising of new varieties, Bruno is the parent par excellence, and apart from that it is a plant of fine garden beauty. Mr. W. Cuthbertson has grown it magnificently in his garden near Edinburgh, and far exceeding what we can do in the south here.

All Irises of the Dominion and Bruno type require a sunny position, and soil that is warm, over good drainage. The rhizomes are so large that, unless thoroughly ripened, the central flowering growth is apt to decay, therefore they cannot have too much roasting. *Robt. W. Wallace, Tunbridge Wells.*

TWO EARLY-FLOWERING IRISES.

IRIS verna, a dwarf species from America, is somewhat similar in appearance to I. chamaeiris, forming masses of green leaves about five inches high. During the first weeks of May, on stems little higher than the leaves, the gay flowers unfold; they are of brightest violet-blue, the standards and the falls being of the same colour. There are no bearded Iris species in America, and yet this diminutive plant does attempt to possess one—albeit a poor attempt—just a narrow band of pubescence, of richest orange, down the centre of the falls, contrasting well, however, with the bright tint of the flowers themselves.

Although coming from southern climes—it is a native of the country south of the Alleghany Mountains, from Virginia to Alabama—this plant prefers the cooler exposures of the rock garden, or thin woodland (not directly under trees), where it will flourish in well-drained sandy soil to which has been added peat and broken crocks or sandstone. It does not require lime, and probably derives much benefit from a pane of glass placed over it during autumn and winter.

Iris Albertii is an important plant belonging to the Pogoniris section of bearded Irises. Some results of crossing it with other varieties may be seen in a few of the newer, early-flowering "pallidas." Although it bears, perhaps, some relation to I. imbricata, it may easily be distinguished by the green spathes, which are rounded, and not keeled as in I. imbricata.

So early as the end of April, the sturdy stems, about two feet in height, reach up above the sword-shaped, glaucous-green leaves and display their several flowers of peculiarly soft colouring, which varies in different forms from pale lavender to greyish-yellow, and is somewhat reminiscent of the richer coloured, late-flowering variety Sunset. The flowers are finely veined with dark brown and mauve, and tinted and softened with intermediate shades. The veining ceases abruptly across the middle of the falls about on a level with the base of the beard, which is pale and greyish, and tipped with gold.

I. Albertii is a native of northern Turkestan. A warm, well-drained position, where the sun will thoroughly ripen the fat, grey rhizomes, is necessary to grow and flower it successfully. All things considered, August and September are the best months in which to divide and transplant it. It should be remembered that these species, and indeed all rhizomatous Irises, do not like their rhizomes to be covered with soil.

Iris Albertii is not common in gardens, perhaps on account of its somewhat peculiar colouring, but it is worth growing if only for its valuable early-flowering properties. *G. S. Thomas, Cambridge.*

THE FUTURE OF THE IRIS.

In the few suggestions which I make here at the request of the Editor, I must disclaim any prophetic gift. I have no desire to win the epithets so commonly bestowed on the unveracity of prophets in general. Still, looking back for forty or fifty years and recalling the work of our captain, guide and friend, Sir Michael Foster, not to mention others who have devoted their time and skill to making better what was already good, one may concede one's imagination a loose rein for a short space.

Our dwarf, bearded Irises call out for brighter colours. Will not some enthusiast devote himself or herself to their improvement? Notwithstanding Mr. Caparne's fruitful labours, there is still work to be done with the intermediates, as was indicated by the appearance of Messrs. Murrell's Sunbeam and Moonbeam last year at Chelsea. A clear pink, for example, is much to be desired.

Then we want plants which will not only blossom in spring, but also again in autumn, like Sir M. Foster's Mrs. Alan Gray. I have heard of one or two others but, unfortunately, I cannot recall their names. I. ochracea suggests that the flowering season may be prolonged. In fact, I believe efforts have already been made in this direction.

We want more self-whites and self-yellows. As the number of dark varieties is so rapidly increasing, more snowy and golden flowers are surely needed to set them off. I long to see a large, tall, shapely white, fit to stand beside our greatest coloured varieties. Indeed, self-coloured Irises generally are very desirable, and the ideal red has yet to appear.

Then there is the question of scent. Many of our present varieties are pleasantly scented, but one would like more of them to possess the fragrance of the white I. cashmiriana which once flowered to perfection in my friend Mr. G. P. Baker's garden at Bexley. Its fragrance was delightful, as was that of I. Bartonii (which Mr. W. R. Dykes considered to be a variety of I. cashmiriana). It once flowered in my York garden—a present from Sir M. Foster. I have never ceased to lament its loss. No scent of Rose or Violet or Viburnum surpasses it. It came originally, I believe, from a ditch at Kandahar.

The subsection 'Sibirica' grows so freely, and crosses so easily, that very careful selection is required among the seedlings, but plants like Perry's Blue, Emperor and Snow Queen are ornaments to any garden, and I look forward to others equally good.

If only an inexpensive method of growing them could be discovered, the Californian Irises, Santa Barbara, Los Angeles, etc., with which Mr. Pilkington delighted us last year, at the Iris Show, might lend an additional glory to the Iris grower's paradise. *G. Yeld, Orleton, Gerrards Cross.*

THE GENUS PRIMULA.

(*Continued from p.* 403.)

NEUROCALYX (Franch.). Woolly-leaved P.
(Malvacea.)

A PERENNIAL species with a tuft of foliage clothed with long, woolly hairs; the leaf blades are oval, from two to three inches across, blunt, heart-shaped at the base, borne on a hairy stalk somewhat longer than the blade; margins sinuately toothed; upper surface clothed with short, woolly hairs, underside more densely clothed with longer hairs. Flower stem four to six inches tall, bearing two or more superposed umbels of few, purple blooms. Corolla about three-eighths-of-an-inch across, divided into five heart-shaped, shallowly bilobed segments; tube cylindrical, about as long as the calyx.

Grows in shady places on the margins of thickets, etc., on the Tsinling Mountains, in Shensi, central China.

Culture: As for P. malvacea.

NINGUIDA (W. W. Sm.). Niveous P.
(Nivales.)

A handsome, somewhat robust perennial species with a stout rootstock clothed with long, fleshy scales densely covered with white meal. The leaves, which are hardly mature when the flowers expand, have broadly lance-shaped, rather pointed blades from three to four inches long, gradually tapering at the base into a broad stalk; margins edged with regular, rounded teeth; both surfaces green but covered with minute, meal-producing, glandular hairs; underside coated with white meal when young. Flower stem robust, about six inches tall, sparsely mealy at the tip, bearing an umbel of three to fifteen rich purple blossoms with a small, dull orange eye. Corolla about one inch across, with nearly elliptic, blunt, entire lobes; tube cylindrical, about half-an-inch long, with a ring in the throat. Flowers in June.

Grows on alpine moorland among dwarf, scattered Rhododendrons, etc., in south-eastern Tibet, at 14,000 to 15,000 feet above sea-level.

Culture: Grow it in good fibrous loam, peat and leaf-soil, in a well-drained, half-shady spot, kept moderately damp in summer.

NIPPONICA (Yatabe). Nippon P.
(Cuneifolia.)

This attractive, dwarf perennial is a sub-species of P. cuneifolia (Ledeb.); it forms a tuft of more or less erect, oblong-spathulate or lance-shaped-spathulate, pointed leaves, one to one-and-a-half inch long, gradually or abruptly tapering to a winged stalk exceeding the blade in length; margins edged with two or three comparatively large, sharp, saw-like teeth; both surfaces more or less mealy, or quite smooth. Flower stem two to five inches tall, slender, flexuous, bearing an umbel of two to five nodding, pure white blossoms. Corolla slightly concave, from five-eighths- to nearly one inch across, divided into five heart-shaped, deeply notched segments rounded at the tip; tube cylindrical below, dilated upwards, about a quarter-of-an-inch long. Flowers in May and June. In cultivation in 1916. (Illustrated in *Notes from the Royal Botanic Garden, Edinburgh,* 1913.)

Grows in damp, rocky mountain pastures in central Japan.

Culture: Good gritty, fibrous loam, in a fairly moist, open spot, should suit it.

NIVALIS (Pall.). Snowy-flowered P.
(Nivales.)

The type of this very beautiful perennial species forms a tuft of oval-oblong or lance-shaped, blunt or rather pointed leaves three to five inches long, tapering to a winged stalk; margins recurved and furnished with blunt teeth, or at times nearly entire; both surfaces more or less smooth. Flower stem stout, four to ten inches tall, bearing one, rarely two, many-flowered umbels of lovely white blossoms. Corolla three-quarters- to one-and-a-quarter inch across, divided into five broadly heart-shaped lobes; tube cylindrical, about twice as long as the calyx. Flowers in June and July.

Grows in damp mountain meadows and on the banks of alpine streams, frequently at considerable elevations above sea-level, on the mountains of many parts of central Asia. Introduced in 1790.

Var. farinosa (Schrenk.). This form is smaller than the type, with coarsely-toothed, elliptic-oblong, rarely entire leaves; underside more or less mealy; margins densely so. Flowers purple, in one or more superposed umbels. Turkestan and the Altai.

Var. sinensis (Pax.). A robust form with entire leaves, densely coated with yellow meal beneath; flowers purple, in superposed umbels. Yunnan, western China, at about 12,000 feet.

Culture: Rich, well-drained loam and peat in an open spot, well supplied with water when the plants are in growth, with protection from wet in winter, are the conditions indicated.

NUTANS (Delavay). Nodding P.
(Soldanelloidae.)

A biennial, in as much as it invariably perishes after flowering. Leaves two-and-a-half to seven inches long, with narrowly elliptic, or broadly lanceolate, somewhat blunt blades, tapering gradually to a broadly winged stalk; margins toothed; both surfaces covered with fine hairs. Flower stems nine to twenty-four inches tall, erect, rather slender, covered with white meal in the upper half and among the blossoms. Produces a crowded umbel or spike one-and-a-half to two inches long, of six to twelve nodding, stalkless, very fragrant blossoms. Corolla three-quarters-of-an-inch to one inch across, lavender-blue to violet, bell- or funnel-shaped, divided into five oval or rounded, concave segments with three very fine teeth at the tip of each; tube funnel-shaped, three-quarters-of-an-inch long, mealy on the outside. Flowers in September and October. Introduced in 1915. (*Gard. Chron.,* May 26, 1928, Fig. 178).

This species grows in, and on the margins of, thin woods, especially in Pine forests, usually in situations sheltered from strong winds and open to the sun, on the mountains of northern Yunnan and south-western Szechuan, at considerable elevations above sea-level.

Culture: Plant it in leaf soil and light loam, in a sheltered, half-shady spot.

OBCONICA (Hance). Ichang P.
(Obconica.)

This handsome species is the parent of numerous beautiful florists' Primulas so popular for greenhouse and window decoration. The true plant is a tufted, deciduous perennial, with a rather stout rhizome which produces short stolons, and these end in tufts of foliage which form new plants. The leaves vary in shape from elliptic to oblong and oval; they are rounded or heart-shaped and measure one to four inches in length; the margins are slightly undulate and have small or large, blunt lobes which are always finely toothed; they are borne on rather stout, hairy stalks one to six inches long; both surfaces glaucous and covered with fine hairs. Flower stem fairly stout, hairy, four to eight inches tall, bearing an umbel of six to twenty lilac or purple blossoms with a pale eye, on stalks half-an-inch to one inch long. Corolla one to one-and-a-quarter inch across, divided into five broadly heart-shaped, shallowly bilobed segments; tube cylindrical, slightly dilated upwards, with an indistinct ring in the mouth. Introduced in 1880.

Grows on rocks in vegetable debris in the Ichang Gorge, Hupeh, central China.

Culture: Grow it in a compost of leaf-soil, loam and limestone chips, and treat as a greenhouse plant; some of the garden forms have been grown successfully in the open air in southern and western England.

OBLIQUA (W. W. Sm.). Oblique-flowered P.
(Nivales.)

A beautiful, deciduous perennial species of robust habit with a large tuft of somewhat leathery leaves, springing from fleshy resting buds, with leaf-like blades three-quarters-of-an-inch to two inches long. The true leaves have narrowly lance-shaped, blunt or somewhat sharp tips, and gradually taper to a winged stalk, with a membranous sheath at the base, in all from three to five inches long; margins edged with sharp teeth; upper surface more or less smooth, underside mealy. Flower stem stout, twelve to eighteen inches tall, bearing an umbel of about half-a-dozen slightly nodding, delicately fragrant, pale yellow, pale flesh-pink or almost white blossoms, thick and velvety in substance. Corolla oblique or irregular, about one inch across, with rounded, notched lobes; tube cylindrical below, funnel-shaped upwards, about three-quarters-of-an-inch long. In cultition in 1920.

Grows in the shade of dwarf Rhododendrons, etc., on the Singalela and Chola Ranges, in the eastern Himalayas, at about 12,000 feet above sea-level.

Culture: Good friable loam and leaf-soil, in a cool, shady spot, should suit it.

OBOVATA (Pax). Obovate-leaved P.
(Carolinella.)

A dwarf, perennial species with a tuft of firm, papery leaves with oblong-egg-shaped or egg-shaped, blunt, frequently retuse blades, wedge-shaped at the base, in all three to five inches long; margins furnished with obscure, blunt or thickened teeth; both surfaces more or less smooth. Flower stem slender, three to five inches tall, bearing a short, umbel-like raceme of rose-coloured blossoms. Corolla about half-an-inch across, divided into five broadly heart-shaped, bilobed segments; tube slender, cylindrical, slightly dilated upwards. (*Bot. Mag.*, t. 6,712.)

Grows in damp places on the mountains south-west of Mengtze, in south-eastern Yunnan, western China.

Culture: As for P. megaseaefolia.

OBTUSIFOLIA (Royle). Blunt-leaved P.
(Obtusifolia.)

A handsome, deciduous perennial species with a stout rootstock and usually mealy resting buds. The rich green leaves, in tufts, are from two to six inches in length and vary in shape from elliptic-spathulate, to egg-shaped or oval, pointed or blunt at the tip, narrowed, rounded or heart-shaped at the base, with a distinct, winged stalk; margins entire or furnished with coarse, blunt or sharp, irregular or regular teeth; both surfaces more or less smooth, or underside covered with yellow meal. Flower stem stout, six to ten inches tall, bearing an umbel of four to fifteen bright bluish-purple blossoms on slender stalks. Corolla three-quarters-of-an-inch to one inch across, flat, with broadly heart-shaped lobes. (Royle, in *Illus. Bot. Him.*, 1839, t. 77, Fig. 1.).

Grows in moderately damp, shady spots in rocky soil in the north-western Himalayas at 10,000 to 14,000 feet above sea-level.

Culture: Good friable loam, in a cool, half-shady spot, is indicated.

ODONTOCALYX (Pax). Haopin P.
(Petiolaris-Sonchifolia.)

An apparently desirable perennial species with a tuft of smooth, non-mealy, membranous leaves about two inches long and one inch wide, with oblong, blunt blades, almost stalkless or gradually tapering to short, winged stalks; margins furnished with irregular teeth as though gnawed by insects. Flower stem stout, about two to three inches tall, bearing a terminal umbel of many blossoms the colour of which has not been recorded, but is probably some shade of purple. Calyx cup-shaped, with broadly oval lobes, each with two to three teeth at the tip. Corolla about one inch across, with broadly heart-shaped, nearly entire or toothed lobes. Not in cultivation.

Grows on the Tsinling Mountains, in the province of Shensi, central China, at about 4,500 feet above sea-level.

Culture: Good friable loam, peat and leaf-soil, in a cool, half-shady spot, is indicated.

OENENSIS (Thomas). White-throated P.
(Auricula-Erythrodrosum.)

A beautiful European perennial species of tufted habit with oblong-wedge-shaped or lance-shaped-wedge-shaped, blunt or truncate, distinctly stalked leaves one to three inches long; margins furnished with sharp teeth toward the tip; both surfaces densely clothed with reddish, viscid, glandular hairs. Flower stem three to four inches tall, bearing a two- to seven-flowered umbel of soft rosy-mauve blossoms with a pure white throat. Corolla half- to three-quarters-of-an-inch across, divided into five broadly heart-shaped, notched lobes; tube cylindrical below, dilated upwards, glandular, about half-an-inch long. (Illustrated in *Journ. Roy. Hort. Soc.*, Vol. XXXIX, 1913.)

Grows on stony alpine slopes and clefts in limestone rocks in the west Rhaetian and Bergmasker Alps.

Culture: Plant it in good loam and grit, in an open, sunny spot well supplied with water when in growth; or it may be cultivated with success in a crevice in a limestone rock, packed with the above compost. *A. W. Darnell.*

(*To be continued*).

HOME CORRESPONDENCE.

[*The Editors do not hold themselves responsible for the opinions expressed by correspondents.*]

Fritillaria karadaghensis.—Fritillaria karadaghensis flowered in the open ground here on March 20; out of six bulbs planted, four flowered, and one had two flowers on a stem. It was planted in an Iris bed fully exposed and with only a three-foot hedge of Lonicera nitida as a wind break. One plant has set seeds. *R. M. A. Keeble, Mottingsden, Burwash, Sussex.*

Difficulties of the Scottish Forestry Commissioners.—While welcoming the friendly intention of the note under this heading in your issue of May 25, I beg leave, as one of the Commissioners, to repudiate the statement that "the great difficulty is to make landowners' sentiment overcome their cupidity." The "great difficulty" is rather that in the hill land to which afforestation is necessarily limited, the proportion of plantable to unplantable land is in Scotland usually very low. Owners are naturally reluctant to part with the plantable and retain the unplantable, which, bereft of its wintering ceases to have any pastoral value. This obstacle in many cases necessitates the acquisition of whole estates. As regards denuded woodlands (which the Commission is prepared to take over, although this is not strictly speaking its job) the "great difficulty" is to make the owners' cupidity overcome his sentiment, since the Commission is prepared to pay a fair price for good areas which the owner cannot afford to replant, and which in their derelict state not only bring in no revenue, but entail some expenditure in taxation and supervision. A few owners have, perhaps, not altogether without reason, a horror of dealing with any government department, but the majority in Scotland, as in England, have met the Commission very fairly, and evinced a real wish to further its work. *John Stirling Maxwell, Pollokshaws.*

The Sweetest-scented Flower.—I would like to state, in reply to *R. Kemp* (p. 369), that I consider the Daphnes, particularly the greenhouse or half-hardy sorts, such as D. indica and D. rubra, should be placed first, for well-grown specimens of these, with from twelve to eighteen trusses of flowers, nearly all fully developed, are hard to surpass in the matter of fragrance. *Barrell, Wroxham Hall Gardens, Norfolk.*

A Fine Old Magnolia conspicua.—I send a snap-shot photograph of a large tree of Magnolia conspicua (Fig. 218) in the grounds of Norwood Court, belonging to the Lorival Manufacturing Co., Southall, Middlesex. So far as I have been able to ascertain, the house was built in 1770 for Josiah Wedgwood, so the Magnolia may be approximately one hundred years old. The tree is eighteen feet high and twenty feet wide, and the trunk has a girth of thirty-four inches at eighteen inches from the ground. I am told it is one of the finest specimens in the country, but no doubt some of your many readers may be able to state whether this is correct. *G. Naylor, Norwood Works, Southall.*

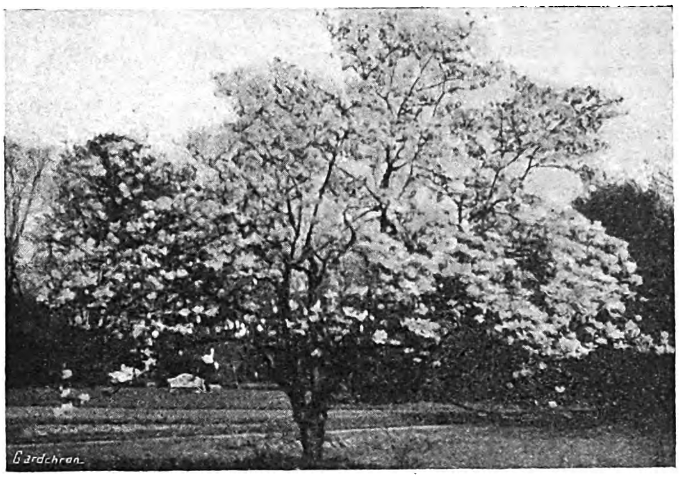


FIG. 218.—AN ANCIENT MAGNOLIA CONSPICUA AT SOUTHALL.

Apple Blossom destroyed.—Like *Market Grower* (p. 368, May 18), I find that the blossoms on my Bramley's Seedling Apples are absolutely killed, also on Lord Grosvenor and some trees of Lane's Prince Albert. These trees were loaded with fruit blossom and appeared to be all right up to a certain date. The same is also true of Raspberry Lloyd George; the canes of this variety are now killed to the ground. This is very disappointing after such good promise of fruit blossom. *W. A. Jenkins, Stockton-on-Tees.*

Herbaceous Calceolarias at Avory Hill, Eltham.—After reading Mr. Turner's article on "Herbaceous Calceolarias" (p. 400) a visit to the winter garden at Avory Hill, Eltham, would more than justify his remarks on this class of plants. I had the privilege of seeing a batch of these plants at Avory Hill last week, and am prepared to state that no finer wealth of colour and better grown specimens of these subjects could be seen in any establishment, and they reflect great credit on Mr. Parrott, the Superintendent, and his assistants. *A. Allen.*

ROYAL HORTICULTURAL SOCIETY'S EXAMINATIONS.

One-hundred-and-eighty-nine candidates entered for the Senior Examination on March 20, 1929, and of these five were placed in Class 1, twenty-eight in Class 2, fifty-seven in Class 3, and eighty-three candidates failed. Sixteen candidates did not present themselves for examination.

A Silver-gilt Medal is awarded to Mr. Harold Fairbank, of Ivydene, Chapmore End, near Ware, Hertfordshire, who was placed first.

The bulk of the candidates, as usual, fall into two groups (1) those who have obviously had practical experience in horticulturre but have had little scientific training, and (2) those whose experience has been the reverse in both respects. A small proportion only of the candidates showed evidence of having seriously studied both sides of the subject, and of these a few did really well. On the whole, however, the level reached was not high.

The majority of candidates attempted Question 6, on the cultivation of a Vine under glass, and Question 9, on herbaceous plants, and answered them quite well. Very few candidates attempted Question 8, on the pruning of flowering shrubs, and many of those who did obviously had little or no knowledge of the subject. Answers to Question 7 were disappointing, the candidates not seeming to realise the importance of successional sowings of Brassicas. There were very few good answers to Question 10, on how to supplement the supplies of organic manure in the garden.

Forty-three candidates were examined in the Junior Section, and of these five were placed in Class 1, five in Class 2, nine in Class 3, and twenty-four candidates failed.

A Silver Medal is awarded to Mr. William A. Hughes, of Cheadle Royal Gardens, Manchester, who was first.

As in previous years, there was a great difference in the standard reached by the various candidates. There was a fair proportion of good answers, but, on the other hand, many were very poor, or even worthless. The chief general fault was the absence from the answers of helpful drawings. Hardy perennials confused a number of candidates, who could not distinguish between perennials, biennials and annuals.

SENIORS.

Class 1.—(1) Mr. Harold Fairbank, Ivydene, Chapmore End, near Ware. (2) Mr. Frederick John Reed, 30-32, Eastover, Bridgwater. (3) Mr. E. K. Lawrence, R.H.S. Gardens, Wisley, Ripley. (4) Miss M. L. Edwards, 111, Alma Street, Newport, Mon. (5) Mr. G. L. Knight, R.H.S. Gardens, Wisley.

Class 2.—(1) Miss I. M. Gover, Studley College, Warwickshire; and Miss M. A. Tracey, Aldersey Horticultural College, near Chester. (3) Mr. W. A. Dove, R.H.S. Gardens, Wisley; Miss K. M. Metcalf, Midland Agricultural and Dairy College, Sutton Bonington; and Miss C. M. Parry, 22, Quentin Road, S.E.13. (4) Miss E. A. Given, Aldersey Horticultural College; and Miss L. C. Style, Studley College. (8) Miss A. D. Lawrie, Aldersey Horticultural College. (9) Miss B. D. Latham, Studley College. (10) Mr. Percy E. Cross, John Innes Horticultural Institution, Merton; and Miss M. Jones, Bourne Lodge, Farnham, Surrey. (12) Miss Marion Lewis, Walmoor College, Chester; Miss M. Roscoe, 58, Redington Road, Hampstead, N.W.3; and Miss M. Glendinning, Studley College. (15) Mr. F. E. M. Praill, The Dell, Grange Street, St. Albans; and Mr. Harry Hall, John Innes Horticultural Institution. (17) Mr. A. G. Tunnard, R.H.S. Gardens, Wisley. (18) Mr. B. Douglas Shane, Farm Institute, Sparsholt, near Winchester; and Miss W. A. Duncan, Aldersey Horticultural College. (20) Mr. C. H. A. Robson, Wyndcliffe, Saffron Walden. (21) Miss D. M. Martin, Lady Gardener's Cottage, Bedgebury Cross, Goudhurst, Kent; Mr. Leslie P. Lee, 66, Selwyn Avenue, Kew Road, Richmond; Mr. R. E. Hardwick, R.H.S. Gardens, Wisley; and Mr. Harry Bone, Aylesbury Road, Wing, Leighton Buzzard. (25) Mr. Thomas Lomas, 79, Gladstone Road, Wimbledon; Mr. William Howell, 14, Riverside, Abbey Estate, Cambridge; and Miss I. M. I. Crane, Studley College. (28) Mr. John A. Haywood, Midland Agricultural and Dairy College.

Class 3.—(1) Mr. Bernard Hoyle, 108, High Street, West Melton, near Rotherham; Mr. F. A. Bush, Arddarroch Gardens, Garelochhead, Dumbartonshire; and Miss M. E. Morris, Ingoldisthorpe, King's Lynn. (4) Mr. W. R. N. B. Barnett, St. Patrick's Hall, Reading; Mr. George T. Goodship, Helford House, Drayton Road, Boreham Wood; Miss E. H. Parsons, Sturtmoor, Landford, Salisbury; Miss J. A. Buchanan, Studley College; and Mr. I. M. Burnet, R.H.S. Gardens, Wisley. (9) Mr. Harold A. Sanders, Wall Lane, near Lichfield; Mr. R. J. English, John Innes Horticultural Institution; Miss K. Barron, The Poplars, Boxmoor; Miss M. E. Woolger, 14, Radnor Avenue, Harrow; Mr. James W. Leggott, 19, Laurel Grove, Waterloo, Liverpool; Miss N. J. Gradon, Whitesmocks, Durham; and Mr. John L. Beddall, 4, Bennett Road, Crumpsall, Manchester. (16) Mr. William A. Hobday, Hopbine Cottage, Dormansland, Lingfield, Surrey. (17) Mr. Thomas Norman, Agricultural Institute, Usk, Mon.; Miss N. Hartley, Fir Trees, Stoke Green, Slough; Mr. John Roberts, Heaton Park, Manchester; Mr. Montague Carter, Colaton, Stone's Road, Epsom; Miss M. C. Johnston, Pye Corner Cottage, Broadway, Worcestershire; Miss M. James, Cheshire School of Agriculture, Reaseheath; and Miss M. Jones, Studley College. (24) Mr. W. E. Rickards, Arrowe Hall, Woodchurch, Birkenhead; and Mr. John N. Acaster, Cheshire School of Agriculture. (26) Miss D. H. Preen, Agricultural Institute, Usk; Miss M. B. Berry, Studley College; Mr. Ernest W. Brown, South Lodge, Elvetham, Hartley, Wintney; and Mr. R. A. Macdonald, R.H.S. Gardens, Wisley. (30) Mr. Frederick J. Marsh, The Lodge, Kites, Ramsden Heath, Billericay; Mr. F. S. Taylor, 25, Aspen Villas, Albert Terrace, Beverley; Mr. E. B. Horton, R.H.S. Gardens, Wisley; and Mr. J. R. Reid, R.H.S. Gardens, Wisley. (34) Mr. Joseph Pearce, The Gardens, Cottesbrooke, Northants; Mr. W. A. Tobias, Midland Agricultural and Dairy College, Sutton Bonington; and Mr. Albert V. Pike, The Gardens, Hethersett, Reigate. (37) Mr. Ross Young, Alexandra Park, Manchester; and Mr. Jack Hardy, 115, Corporation Road, Darlington. (39) Mr. John P. G. Page, The Hoo, Buckden, Hants.; Mr. John H. Lock, Alexandra Park, Manchester; Mr. George C. Searle, 5, Fenswood, Long Ashton, Bristol; Miss P. Askworth, Cheshire School of Agriculture, Reaseheath; and Miss G. Kershaw, Studley College. (44) Mr. John W. Norwood, 2, College Cottages, Hextable; Miss Vivien Graves, Walmoor College, Chester; Mr. John D. Douglas, Penninghame Gardens, Newton-Stewart, Wigtownshire; Miss S. H. Ironside, Studley College; Miss Rosemary May, Studley College; Mr. John W. Worrall, 154, Nottingham Road, Hill Top, Eastwood, Notts.; Mr. Lawrence Wass, Nether Hall Nursery, Dronfield, near Sheffield; and Mr. H. S. Boothman, R.H.S. Gardens, Wisley. (52) Mr. Cecil J. Callister, Ballaglonney Cottage, Crosby, Isle of Man; Mr. Charles W. West, 4, Rose Cottages, Beardall Street, Hucknall; and Mr. P. B. Platts, R.H.S. Gardens, Wisley. (55) Mr. G. W. G. Freeman, 11, Northfields, Twyford, Berks.; Miss J. Anderson, c/o W. Anderson, Esq., Mortimer; and Mr. James George, Reelig Lodge, Kirkhill, Inverness-shire.

JUNIORS.

Class 1.—(1) Mr. William A. Hughes, Cheadle Royal Gardens, Manchester. (2) Miss Z. F. Ford, Agricultural Institute, Usk, Mon. (3) Miss K. F. Heley, Hele, Valebridge Road, Burgess Hill. (4) Miss P. Chaplin, The University, Reading; and Miss W. M. Long, Conisborough, Rosebery Avenue, Linslade, Leighton Buzzard.

Class 2.—(1) Mr. G. R. Long, R.H.S. Gardens Wisley. (2) Mr. K. G. L. Rackett, The Farm Institute, Sparsholt, near Winchester. (3) Mr. D. A. Builder, R.H.S. Gardens, Wisley. (4) Mr. F. G. Goldsack, 32, Landport Street, Fratton, Portsmouth; and Mr. H. C. Haskins, R.H.S. Gardens, Wisley.

Class 3.—(1) Miss E. M. Chambers, The Farm Institute, Sparsholt; and Mr. K. C. Boorman, R.H.S. Gardens, Wisley. (3) Mr. S. C. Willson, R.H.S. Gardens, Wisley. (4) Mr. William Henry Butt, Agricultural Institute, Usk. (5) Mr. Charles William King, 42, Cassland Road, South Hackney, N.E. (6) Mr. G.N. Stallard, 155, Beardall Street, Hucknall, Notts.; and Mr. N. S. Flowers, R.H.S. Gardens, Wisley. (8) Miss M. E. Foster, 80, Polsloe Road, Exeter; and Mr. Henry C. Rudge, 24, Taylor Street, Nechells, Birmingham.

TEACHERS' EXAMINATION IN SCHOOL AND COTTAGE GARDENING.

Of the 296 candidates who entered on March 23, 108 were placed in the First Class, seventy-nine in the Second Class, forty-one in the Third Class, and twenty-seven candidates failed. Three candidates who failed omitted to answer the compulsory question. Forty-one candidates were absent.

A Silver-gilt Medal is awarded to Mr. Clarence Charles Quelch, of the School House, Gaunt's Common, Wimborne, who was first.

The answers to the Compulsory Question, asking for the cropping plan for one year for two poles which were to be allocated to two boys, were, on the whole, very good. Some of the answers showed distinct evidence of "cramming," particularly those to Question 5, dealing with Apples for a cottager's garden. Some of the answers to Question 3, on pruning, were excellent, showing a good knowledge, but a few candidates did not give much thought to the subject. Some of the answers showed a higher standard than in previous years, but a common fault was the incompleteness of the answers.

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NURSERY NOTES.

MESSRS. BARR AND SONS.

Although our visit, a few weeks ago, occurred somewhat near the end of the Daffodil season, and rather too early for the Tulips, owing to the lateness of the season, yet there was much of interest to be seen at the Taplow nursery—on the Bath Road, near Maidenhead, and within easy distance of London—of Messrs. Barr and Sons, so that a very enjoyable day was spent.

This firm is far-famed, not only for bulbous subjects, but for practically every type of garden plant, although it is, perhaps, with the Narcissus and Tulip that the name of Barr is chiefly associated, and rightly so, for there can be no better nursery stocks of these subjects in the country than are to be found at Taplow.

Although the Narcissus season was drawing to a close, there were yet many fine sorts to be seen—huge drifts of many varieties—all remarkably clean and healthy, the best display, naturally, being provided by the Poets Narcissi, which were in their prime and occupied an enormous area, forming a huge sheet of orange-lit whiteness.

A large bed of Cassandra, a good garden sort of moderate price, made a grand display, the small, dark red-rimmed cups standing out well against the firm, pure white perianths; another noteworthy sort, as seen growing at Taplow, was Ethelburga, with large, pure white segments and a red-margined, lemon-yellow eye. Oracle, which has a wonderfully symmetrical bloom, and Corinna, also suggested themselves as being good Narcissi for general garden culture, the last-named having a medium-sized, shapely bloom, with white perianth segments and an orange-yellow cup, fringed with deep red. Among really first-class sorts in this collection, one of the grandest was Snow King, which would appear to be an excellent "doer"—it is very beautiful, with large, round perianth segments and a yellow, red-edged cup. Sarchedon, also, was worthy of special note, being of fine form and texture, with rounded, pure white perianth segments and a small, rich yellow cup, fringed with crimson-scarlet.

However, it was not only among the Poeticus Narcissi that grand blooms were to be seen. Nearby, were numerous batches of late-planted sorts, and it was noticeable that these, which were not planted until December—after the late orders had received attention—made a very striking display and had, in a few instances, come through the severe and trying winter better than the early planted bulbs. Noteworthy varieties in this collection were White Pearl, a grand Leedsii, with large, pure white perianth segments and a creamy-white crown; Ixion, a good Incomparabilis of general garden merit; Prince of Wales, a bold Trumpet variety with soft primrose-yellow perianth segments and a bright yellow trumpet; and Prince Fushimi, another Incomparabilis of outstanding merit.

In another portion of this extensive nursery were the general stock beds, together with huge drifts of seedlings, for new Narcissi varieties are being produced continually at Taplow and, as is well-known, Messrs. Barr and Sons have been responsible for the introduction of many striking seedlings, so that a close inspection of the beds of, at present, unselected seedlings, revealed several that will occupy high positions among the élite Narcissi. One exceptionally fine Barrii seedling of grand substance, with a clear cream-coloured perianth and a rich orange cup, caught the eye at once, while among the many Triandrus hybrids also there were some fine varieties.

In the general stock beds the majority of the varieties were over for the season, although there were still good blooms of Proteus, a late giant-flowered Incomparabilis, very fine; Zanzibar, one of the newer Barrii Narcissi of grand form and colouring, and several others.

As stated, it was too early to see many Tulips in bloom; a few early sorts were making a bright display, but had we been a few weeks later, what a glorious picture would have greeted us! Seldom, if ever, have we seen such healthy and vigorous stocks; huge beds of each variety with no gaps or misses in the rows, the Darwins especially giving promise of a brilliant and varied display judging by the large variety grown.

But there were plenty of other subjects in flower to command attention, while the plants out of flower were almost equally as interesting. Messrs. Barr and Sons, in the first place, have an unique collection of bulbous Irises, also of Delphiniums, which, despite the trying conditions, were in fine fettle, and the collection of Paeonies, embracing all the best among garden hybrids, and many rare species, although not yet in flower was sufficient to interest a Paeony enthusiast for some considerable time, especially the species, among which were, to mention but a few, P. corallina, P. Bakeri, P. officinalis in several varieties, including Fire King, P. var. lobata and the rare P. Sabinii; and P. Mlokosewitchii, a rare, dark-foliaged Caucasican species, producing large, single, citron-yellow blooms.

We noted some exceptionally good strains of Polyanthus, the results of years of selection, while it would also appear that Messrs. Barr and Sons have made a speciality of the newer Earlham Montbretias, judging by the huge beds of numerous varieties, notably His Majesty, which were being planted.

It was, of course, too early to see the Bearded Irises, of which the Taplow firm has one of the finest collections in the country, but the dwarf pumila Irises were making a brave display, and formed a very representative collection.

Space would not permit the enumeration of the many interesting herbaceous plants which claimed attention, nor of the numerous alpine plants which are grown for stock purposes; much could be written on the Hellebores alone, some two hundred named varieties being in flower in a specially cool and congenial border, where also were numerous other shade-loving plants.

Lilies also receive special attention from the Taplow firm, and it was extremely educative to see them in their various quarters. L. Martagon, L. testaceum and several others, including a few of the rarer species, were, for instance, flourishing in a specially prepared bed of rather light soil, in a cool, shaded border; in heavier soil, and under more open conditions, were the hardier sorts, such as L. umbellatum, L. Hansonii, etc., all looking very happy; while in yet another part of the nursery, where the soil is naturally moist, were such moisture-loving Lilies as L. giganteum, L. Henryi, L. Parryi, etc., growing in association with Trolliuses and other plants requiring moist conditions.

And then, upon making our way back to the offices and bulb stores—buildings specially constructed for the drying and storing of Narcissus and Tulip bulbs, the two requiring quite different conditions—and after inspecting the propagating houses where, incidentally, was a large batch of fine, healthy pot plants of Romneya trichocalyx, and the frames devoted to plants for bedding, Antirrhinums, Chrysanthemums, etc., we came to the quarters of the lesser bulbous subjects. Here were large drifts of Muscari in variety, Scillas, Anemones and many Tulipa species, notably T. Eichleri, T.

dasystemon and the golden-yellow T. chrysantha; also various Fritillarias, all making a brave display. In this section also there was a grand bed of Iris cristata, some two thousand plants in all, while in a sheltered border against the offices was a comprehensive collection of double-flowered Primroses, providing a bright display of colour.

Much more could be written of the plants seen at Messrs. Barr and Sons' nursery at Taplow; of the Water Lilies, a branch recently extended; and of the various specialised collections of herbaceous plants. The visit was so enjoyable and educative that we look forward to another at, perhaps, some other season of the year, for the variety of plants grown at Taplow is such that there must be a wealth of flowering plants to be appreciated almost throughout the year.

PUBLIC PARKS AND GARBENS.

The Chingford Urban District Council has concluded negotiations for a loan of £1,200 for public walks and pleasure grounds.

The Donaghadee Urban District Council has authorised the surveyor to supply the Ministry of Home Affairs with detailed particulars of the work proposed to be undertaken in the scheme for further development of the commons as a park. Application for a supplemental loan of £1,500 has been made.

The Great Yarmouth Town Council has agreed provisionally to accept the offer of Messrs. Burton and Son to give the Council the disused burial ground, known as Yarmouth General Cemetery, to be maintaind as an open space.

It is proposed that the Parks Committee of the Wallasey Town Council should take over the Upton Park Estate, embracing about 106 acres. Of this estate it is understood that fifty-four acres be reserved for recreation, and thirty for housing.

The Ministry of Health has held an enquiry into an application by the Liverpool Town Council for approval of town-planning scheme No. 2—for Gateacre, Childwall, the Wooltons, and parts of Allerton, Wavertree and Whiston. The scheme embraces ornamental gardens, parks and parkways, riverside walks and the preservation of open spaces.

The Shoreham Urban District Council is making an application to the Ministry of Health for sanction to borrow £500 for the purchase of land for an open space at the Meads, Victoria Road.

The Ministry of Health will hold an enquiry at St. Ives into an application by the Town Council for sanction to borrow £2,250 for laying out rock gardens and constructing a putting green, and for the erection of tea-rooms at Porthminster green and beach.

The Cheadle and Gatley Urban District Council proposes to negotiate for the purchase of about fifteen acres of land at Gatley for a recreation ground.

The City Surveyor and City Engineer of Manchester have been authorised to prepare a report as to the cost of converting the old graveyard of St. John's Church, Deansgate, into a garden.

At a meeting held in Glasgow a few days ago, the question of acquiring a large area in the Cairngorm Mountains as a National Park for Scotland was considered. Sir Ian Colcoquhoun presided and many Scottish societies were represented. It was estimated that a capital sum of about £100,000 would be needed to purchase and equip the area, and Sir John Stirling Maxwell suggested that here was a grand opportunity for some wealthy Scot to provide this amount and thereby render his country a signal service.

SOCIETIES.

GARDENERS' CLUB.

The Annual Meeting and Dinner of the Gardeners' Club was held at St. Ermin's Hotel, Westminster, on the first evening of Chelsea Show (May 22). The accounts showed a substantial balance in hand, and it was resolved to send donations from the Club funds to the Gardeners' Royal Benevolent Institution, and the Royal Gardeners' Orphan Fund.

The following officials were elected for the ensuing year:—Chairman, Mr. T. Hay, Hyde Park; Vice-Chairman, Mr. F. Jordan, Ford Manor; Treasurer and Secretary, Mr. F. C. Puddle, Bodnant; Assistant Secretary, Mr. A. Bullock, Copped Hall; Committee: Messrs. C. H. Cook, J. Comber, W. Hales, C. P. Raffill, J. G. Weston, F. G. Preston, G. Taylor and R. Findlay. Mr. T. Hay, on behalf of the members, made a presentation to the Secretary in recognition of his services.

After the meeting, forty-one members sat down to dinner, and a very pleasant evening was spent.

GUILDFORD AND DISTRICT.

The first outing of the season took place on Saturday, May 18. A combination of felicitous circumstances—the perfect weather, the singular beauty of the district, and the extreme cordiality of Sir William and Lady Lawrence—conspired to make the visit to Burford memorable. Sir William and Lady Lawrence personally received the members and conducted them round the gardens, assisted by a daughter and a neice.

The first thing that impresses a visitor to Burford is the situation. Unlike many mansions in Surrey that occupy a position commanding far stretching views, this fine Georgian mansion is built at the foot of Box Hill, where the River Mole cuts through the North Downs—the famous chalk ridge that William Cobbett traced from Farnham to the Shakespeare Cliff at Dover. The little river ripples through these grounds, and from the opposite bank Box Hill rises majestically for some 450 feet. In immensity and grandeur it is almost as imposing as parts of Cheddar Gorge, although different in character. The face of the cliff is well covered with Box and Juniper, sombre in hue, with glints of chalk showing between. Scattered here and there a few Whitebeam make a pleasing contrast, and one solitary Beech was conspicuous in its tender green. This wonderful picture forms the background to the house and garden.

The garden is unlike any visited before. Massed colour schemes, or beds and borders of familiar and popular varieties are not found at Burford. Sir William's leaning, one might, perhaps, state his delight, is along experimental rather than conventional lines. Hence, he has gathered a collection of rare and choice subjects. Many plants have a sentimental value, inasmuch as they were collected by Sir William or Lady Lawrence in Canada, Algiers, Morocco and elsewhere. Diverse in variety and semi-tropical though they are, they live quite happily in gravelly beds and have come through the past winter with very little damage.

One extensive lawn is planted with many rare shrubs, some coming late into flower this year; others gay with blossom. Among them were Pyrus Scheideckeri, P. Zumi var. alba, P. Eleyi, P. Malus var. aldenhamensis, and P. M. var. Niedzwetzkyana.

Trailing over the stump of a dead tree, a Mutisia retusa was in flower; this was brought from the Argentine Andes five years ago. Close by is a collection of Amelanchiers, including A. (florida) oxyodon, A. rotundifolia, A. vulgaris var. cretica and A. alnifolia var. pumila in flower. Further on is a very deep blue Gentian and a Lithospermum—a relation of Heavenly Blue—but with blooms of a rich yellow colour.

In the moraine, a Viola, a gift from Lady Byng, brought from Canada, is highly prized, so also is a small yellow Violet, of Canadian origin. A dusky-faced Pansy—Irish Molly—was noticeable, together with Phlox canadensis, Androsace carnea var. Laggeri, A. Chumbyi Lewisia Finchii, Phacelia sericea, Gentiana acaulis, G. verna, Aethionema Warley Rose, Meconopsis integrifolia var. brevistyla, and M. quintuplinervia, and a small-growing Anchusa with flowers resembling Forget-me-nots. On a wall is a Wistaria brought from China twenty-five years ago, now carrying its white blossoms.

In the houses were, likewise, many unusual plants in addition to Melons, Plums, Peaches, etc., all in a perfectly healthy condition.

Finally, the party was conducted to a beautiful lawn by the mansion, where tea had been prepared out-of-doors. Lady Lawrence presided at the tea table, charmingly decorated with Cowslips picked from the meadows.

Alderman W. T. Patrick expressed thanks for the great kindness extended, and Sir William Lawrence spoke of the pleasure it had given him to receive members of the Assoication, and to learn of the work it was striving to do.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, May 3, the members of Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, A. Coningsby, A. Keeling and H. Arthur (Secretary).

First Class Certificate.

Phaius Cooksonii var. magnificus.—A large, bold flower.—From J. B. Adamson, Esq.

Awards of Merit.

Odontoglossum Mirum var. Walden and *O. Llewellyn var. Purple Gem.* From J. B. Adamson, Esq.

Odontioda Bradshawiae var. Perfecta and *O. Louise.* From Captain W. Horridge.

Laelio-Cattleya Bunglow (*C. Suzanne Hye × L.-C. Ernestii*).—From Messrs. A. J. Keeling and Sons.

Award of Appreciation.

Odontoglossum Red Admiral var. Brilliant.—From J. B. Adamson, Esq.

Cultural Certificates.

To Mr. J. Howes, for Phaius Cooksoni var. magnificus and Masdevallia Houtteana; and to Mr. A. Burns, for Miltonia Lucia var. Fidelia.

Groups.

J. B. Adamson, Esq. (gr. Mr. J. Howes), Blackpool, staged a group to which a Gold Medal was awarded; Odontoglossums were represented by O. harvengtense, O. Doreen, O. Queen of the Belgians, O. Harold, O. eximium var. regale, and P. Princess Mary; Odontioda Viking, O. Leeana, O. Theresa and O. Olympus var. nigrum were also shown, with Oncidium varicosum var. Rogersii and O. Marshallianum; Lycaste Deppei and L. brevispatha.

Mrs. Bruce and Miss Wrigley (gr. Mr. A. Burns), Bury, were awarded a Large Silver Medal for a group containing Miltonias and hybrids of the vexillaria section in great variety; Odontoglossum crispum var. Abigail, O. Mercia and O. Philippa; Odontioda Vuylstekeae and Sophronitis grandiflora.

Captain W. Horridge (gr. Mr. A. Coningsby), Bury, staged Odontiodas in variety, Miltonia hybrids and Sophronitis grandiflora. Messrs. A. J. Keeling and Sons showed Odontioda Harlequin, Miltonia Lena, Lycaste Lawrenceana, Bulbophyllum moniliforme and Dendrobium Pierardii.

At the meeting held on Friday, May 17, the members of Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, A. Keeling and H. Arthur (Secretary). Mr. J. Howes was invited to sit with the Committee.

First Class Certificates.

Miltonia vexillaria var. Duke of York.—A large flower, suffused with pink, and with a deep maroon mask. *Miltonia Hyeana var. King William.*—White, petals soft pink, lip lined with pink and with a yellow mask. From Mrs. Bruce and Miss Wrigley.

Miltonia Kennie var. Princess Elizabeth.—A round flower, pink, with velvety-crimson mask. *Odontioda Freda.*—A large flower with pink blotches, and *Trichopilia Hennessii.*—A large, white flower with yellow throat. From Messrs. A. J. Keeling and Sons.

Awards of Merit.

Miltonia vexillaria var. Duchess of York, M. Hyeana var. King Harold, and *M. H. var. King Henry.* From Mrs. Bruce and Miss Wrigley.

Cultural Certificates.

To Mr. A. Burns, for Miltonias, and Dendrobium Victoria Regina; the last-named plant has been exhibited for nineteen years in succession.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), was awarded a Silver-Gilt Medal for a group of Odontoglossums in variety, including O. Everest, O. Amethyst, O. illustrissimum and O. Black Prince; Odontioda Margaret and O. Hippolyta; Cypripedium Enchantress, C. Maudiae, C. Rosettii var. Goliath, C. bellatulum and C. niveum; Vanda cristata and Oncidium varicosum var. Rogersii.

Mrs. Bruce and Miss Wrigley (gr. Mr. A. Burns), Bury, were awarded a Gold Medal for a group containing Miltonias (in addition to those gaining awards)—M. vexillaria var. Oswaldii, M. v. var. G. D. Owen, M. v. var. Solus, M. v. var. Goliath, M. v. var. virginale and M. v. var. Robusta; M. Hyeana var. King Athelstan, and M. H. var. F. M. Ogilvie. together with Odontoglossums and Odontiodas, Messrs. A. J. Keeling and Sons showed Laelio-Cattleya G. S. Ball and Trichopilia tortilis.

ROYAL HORTICULTURAL.

The following awards have been made to the undermentioned vegetables by the Council of the Royal Horticultural Society, after trial at Wisley.

Dwarf French Beans.

(Under Glass.)

First Class Certificate.

(46). **Canadian Wonder Improved* (*Flageolet Rouge*), sent by Messrs. W. H. Simpson.

Awards of Merit.

(32). *Bounteous,* sent by Messrs. Watkins and Simpson; (53) **Early Prolific,* sent by Messrs. James Carter and Co.; and (55) **Fifty Days,* also sent by Messrs. James Carter and Co.

Highly Commended.

(34). Perpetual, sent by Messrs. James Carter and Co.; (35) Monster Negro, sent by Messrs. W. H. Simpson; (50) Earliest of All, sent by Messrs. Nutting; (52) Early Warwick (or Early Prolific), sent by Messrs. Harrison; and (56) Helmingham Early Prolific, sent by Mr. C. Orchard.

Commended.

(10). Saxa, sent by Messrs. Zwaan and van der Molen; (15) Ne Plus Ultra, sent by Messrs. Kelway; and (57) Langport Wonder, also sent by Messrs. Kelway.

GENERAL BULB GROWERS' OF HAARLEM.

The Narcissus Committee of the above Society made the following awards at the International Daffodil Show, held at Haarlem, on May 1 and 2.

First Class Certificate.

Narcissus Irene Copeland (*Double*).—White and soft yellow; a double form of an Incomparabilis, with a Paeony-like flower.

Awards of Merit.

(Market Flowers.)

Narcissus Henna (*Incomparabilis*).—Deep lemon-yellow perianth, and a clear orange, tubular cup. Raised by Mrs. R. O. Backhouse.

N. Red Rim (*Poeticus*).—Round, white perianth, and a flat, button-shaped cup, which is greenish-yellow, with a wide orange-red border. Raised by the Rev. G. H. Engleheart.

N. Wide Wing (*Poeticus*).—White perianth, with a flat, yellowish-red bordered cup. Raised by the Rev. G. H. Engleheart.

Awards of Merit.

(Show Flowers.)

N. Commander Byrd (*Bicolor Trumpet*).—Large, lemon-yellow trumpet, strongly frilled; sulphur-white perianth. Raised by Messrs. V. Zonneveld Bros. and Philippe, Sassenheim.

N. Estelle (*Incomparabilis*).—Lemon-yellow perianth, with a deep orange, heavily frilled cup. Raised by Mrs. R. O. Backhouse.

N. Friar (*Leedsii*).—Sulphur-white perianth, and a small, frilled, yellow cup. Raised by Mrs. R. O. Backhouse.

N. J. K. Ramsbottom (*Barrii*).—Clear white perianth, with a deep-yellow, orange-bordered cup. Raised by P. D. Williams, Esq.

N. Marvellous (*Bicolor Trumpet*).—Very large, golden-yellow trumpet, and a firm, sulphur-white perianth. Raised by Messrs. C. Alkemade Azn, at Noordwijk.

N. Mr. Nijgh (*Barrii*).—Clear white perianth; the deep orange cup is frilled and has a yellow centre. Raised by Mrs. R. O. Backhouse.

N. Naomi (*Barrii*).—Flat, sulphur-yellow perianth; the cup has a deep orange border and a butter-yellow centre. Raised by Mrs. R. O. Backhouse.

N. Orange Circlet (*Incomparabilis*).—Perianth lemon-yellow; cup butter-yellow, with an orange-red, distinctly marked border. Raised by Messrs. Barr and Sons.

N. Peerless (*Poetaz*).—Flowers of medium size borne two on each stem; soft apricot-coloured perianth, with a deep orange cup. Raised by Mrs. R. O. Backhouse.

N. Red Knight (*Incomparabilis*).—Perianth creamy-white, with a large, yellow, clear orange-coloured cup. Raised by Mrs. R. O. Backhouse.

N. Twinkle (*Barrii*).—Small, apricot-coloured flower, with a deep orange cup and apricot-coloured stamina. Raised by Mrs. R. O. Backhouse.

N. Vixen (*Incomparabilis*).—Sulphur-white perianth and wide-spreading, clear orange cup. Raised by Mrs. R. O. Backhouse.

ANSWERS TO CORRESPONDENTS.

Border Carnations.—*H. M. M.* We do not know of a book which deals with the commercial growing of border Carnations.

Gardener's Notice.—*T. L.* In the absence of any special agreement as to notice when you were engaged as a head gardener, you are entitled to receive one month's notice determining such engagement.

Growing Cut Flowers Under Glass.—*America.* All things considered, we think the Chichester district would be more suitable than Wokingham for the cultivation of cut flowers under glass. It would have the advantage of sunshine and shelter from the north and would also be in fairly close proximity to a long stretch of southern watering places, as well as fairly handy for the Continent.

Lawn Grass Unhealthy.—*A. E.* Assuming the drainage is in good order, your lawn is, in our opinion, suffering from exhaustion. A liberal quantity of good soil and decomposed organic manure should have been incorporated with the existing soil. It is also important that when a lawn becomes sufficiently established, it should receive careful treatment and attention, otherwise it will soon deteriorate. We suggest fortnightly dressings of a good lawn fertiliser and sulphate of ammonia alternately, at the rate of two ounces per square yard, and 1 lb. per forty square yards respectively, put on in dull weather and well watered in. When the grasses show signs of responding to the treatment, monthly dressings will then suffice. Discontinue the use of fertilisers about the middle of September, and in December give the lawn a good dressing of well-decayed farmyard manure.

Names of Plants.—*G.* 1, Potentilla fruticosa var. Veitchii; 2, Deutzia gracilis; 3, Crucianella stylosa; 4, Alyssum argenteum; 5, Polemonium, probably coeruleum; 6, Helianthemum vulgare var; 7, we cannot undertake to name garden varieties of Roses; 8, Libertia grandiflora; 9, Wistaria floribunda var. alba.—*J. B. D.* Pyrus purpurea.—*A. E. W.* 1, Rhododendron Manglesi; 2, R. Gauntlettii; 3, R. Griffithianum hybrid.—*M. Y. W.* Photinia serrulata, a native of China; has white flowers in April or May, red fruits in autumn. Natural Order Rosaceae.—*C. G.* 1, Rhododendron Maddenii; 2, Saxifraga granulata; 3, Skimmia japonica [Thanks for 1s. for R.G.O.F. Box.—Eds.].

Pond Water Discoloured.—*G. A. H.* The note you referred to appeared in our issue for October 27, 1928 (p. 340). Copper sulphate is the chemical employed for this purpose, half-an-ounce of this being sufficient for 3,125 gallons of water. The quantity to use will, of course, depend upon the size of your pond; to estimate the quantity of water in the pond multiply the length by the breadth, and that by the depth, to find out the number of cubic feet, which should be multiplied by six-and-a-quarter to ascertain the number of gallons of water. Place the copper sulphate in a muslin bag and trail it through the water until it is dissolved.

Rats' Tails on Lawn.—*A. F. K.* The weed is Equisetum arvense (Field Horsetail). It is of common occurrence on deep, loamy soils, especially those that are damp and sour, although we have seen it on dry, sandy soil. If the soil of the lawn is too damp for general garden purposes, it should be drained in the autumn, and the drains need not be more than one foot deep and about the width of the spade. A light dressing of sifted loam, with one-third of newly-slaked lime, could be given after it is mown. This could be repeated in autumn to get more lime in the soil. Sulphate of ammonia would have little effect upon the weed on account of its siliceous, warty coating; but you could give a dressing of half-an-ounce to the square yard, and repeat it two weeks later to encourage the grass to grow. Water the lawn after each dressing, if the weather is dry. Mow the lawn the first time with a scythe or garden shears. The repeated mowing of the lawn will keep the Horsetail very low and impoverish the roots, so that eventually it may disappear altogether.

Tomato and Melon Diseased.—*J. W.* It was quite impossible to diagnose the trouble from the portion of Tomato and Melon plants submitted—it is essential to send the entire infected plant.

Tulips Diseased.—*C. of C.* Your Tulips are attacked with "fire" due to Botrytis tulipae, and also millepedes, Bolydesmus complanatus. A similar trouble was dealt with in the issue of *The Gardeners' Chronicle* for April 13, 1929 (p. 286), which see.

Vine Foliage Unhealthy.—*E. W. P.* The Vine leaves do not show any signs of having been attacked by parasitic fungi. The trouble is a physiological one, the excrescences on the foliage arising from some cause such as the relation between water supply and the requirements of the plant. Attention should be paid to the state of the borders in relation to watering, together with careful attention to ventilation.

Communications Received.—J. W. B.—A. B.—H. F.—H. A.—F. J.—T. P.—F. C. P.—J. S. M.—S. A.—H. S.—M. G.

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* Denotes Award recommended for earliest forcing.

MARKETS.

COVENT GARDEN, Tuesday, June 4, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum, per doz.	10 0–12 0
—elegans ...	10 0–12 0
Aralia Sieboldii	8 0—9 0
Araucarias, per doz.	30 0–40 0
Asparagus plumosus ...	12 0–18 0
—Sprengeri ...	12 0–18 0
Aspidistras ...	16 0–60 0
Aspleniums, doz.	12 0–18 0
—32's	24 0–30 0
—nidus ...	12 0–15 0
Cacti, per tray, 12's, 15's ...	5 0—7 0
Cinerarias, per doz.	21 0–24 0
Crotons, per doz.	30 0–45 0
Cyrtomiums ...	10 0–12 0
Erica persoluta, per doz. ...	24 0–36 0
Fuchsias, per doz.	12 0–18 0
Heliotropes, per doz.	15 0–18 0
Hydrangeas, white, per doz.	24 0–30 0
—pink and blue, per doz. ...	24 0–36 0

	s. d. s. d.
Lilium longiflorum, per doz.	18 0–24 0
Marguerites, white, per doz.	16 0–21 0
Mignonette, per doz.	18 0–24 0
Nephrolepis, in variety ...	12 0–18 0
—32's	24 0–36 0
Palms, Kentia,	30 0–48 0
—60's	15 0–18 0
Pelargoniums, per doz. ...	9 0–18 0
Primula malacoides, 60's, per doz. ...	7 0—8 0
Pteris in variety	10 0–15 0
—large, 60's ...	5 0—6 0
—small „ ...	4 0—5 0
—72's, per tray of 15 ...	2 6—3 0
Rhodanthe, pink and white ...	12 0–15 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	9 0–10 0
—cuneatum, per doz. bun. ...	5 0—6 0
Anemone St Brigid, per doz.	3 0—5 0
Arums (Richardias), per doz. blooms ...	3 0—4 0
Asparagus plumosus, per bun., long trails ...	2 6—3 0
—med. sprays	2 0—2 6
—short „	0 9—1 0
—Sprengeri, bun. long sprays...	2 0—2 6
—med. „ ...	1 6—2 6
—short „ ...	1 0—1 3
Carnations, per doz. blooms	2 0—5 0
Cornflower, blue, per doz. bun.	4 0—5 0
—pink, per doz. bun.	4 0—4 6
Croton leaves, per doz. ...	1 9—2 6
Delphinium, blue, per doz. spikes	5 0—6 0
Ferns, French, per doz. bun.	10 0–12 0
Forget-me-nots, per doz. bun.	6 0—9 0
Gladiolus, Blushing Bride, per doz. bun. ...	15 0–18 0
—The Bride, per doz. bun. ...	15 0–18 0
—Peach Blossom, per doz. bun.	18 0–24 0
—Scarlet, per doz. spikes ...	4 0—5 0
—Primulinus, per doz. spikes ...	4 0—4 6
Gypsophila elegans, white, per doz. bun.	6 0—9 0
Heather, white, per doz. bun.	9 0–12 0
Iceland Poppies, per doz. bun.	2 6—3 6
Iris, Spanish, blue, per doz. blooms	1 3—1 6
— — white, per doz. blooms	1 3—1 6
— — yellow, per doz. blooms	1 6—2 0
— — mauve ...	1 3—1 6

	s. d. s. d.
Lilium longiflorum, long, per bun. ...	2 0—2 6
— — short, per doz. blooms	2 0—2 6
—speciosum rubrum, long, per doz. ...	4 0—5 0
— — — short, per doz. ...	2 6—3 0
Lily-of-the-Valley, per doz. bun.	18 0–30 0
Marigolds, per doz. bun. ...	3 0—5 0
Myrtle, green, per doz. bun.	1 6—2 6
Narcissus, double white, per doz. bun.... ...	5 0—6 0
Nigella, blue, per doz. bun.	9 0–12 0
Orchids, per doz.	
—Cattleyas ...	18 0–30 0
Paeonies, red, 6's, per doz. bun.... ...	15 0–18 0
—white, per doz. bun.	15 0–18 0
Pyrethrum, single red, per doz. bun. ...	3 0—5 0
—single pink, per doz. bun.	3 0—5 0
—double pink, per doz. bun.	3 0—4 0
Roses, per doz. blooms—	
—Columbia ...	3 0—4 0
—Richmond ...	2 6—3 6
—Yellow ...	2 6—3 6
—Molly Crawford	2 6—3 0
—Butterfly ...	2 6—3 6
Smilax, per doz. trails ...	5 0—6 0
Statice, mauve, per doz. bun.	4 0—5 0
—Suworowii, per doz. bun.	9 0–18 0
Stock, double white, per doz. bun.... ...	9 0–18 0
—double pink, per doz. ...	12 0–15 0
Sweet Peas, various, per doz. bun.... ...	6 0–24 0

Remarks.—Double white Narcissi will probably finish this week, but double white Pyrethrums are coming to hand in good condition, also some double white and mauve Stock from home-growers. All Pyrethrums, both single and double varieties, should become more plentiful now. More outdoor blooms have been on offer during the past week, especially Cornflowers, Delphiniums, Nigella (Love-in-a-mist), Iceland Poppies and Gypsophila elegans. Irises are arriving in large quantities from home-growers and the Channel Islands, but all require immediate sale, more especially the blue and white varieties, the yellow I. Cajanus being in the best condition so far received this season. Carnations and Roses show little change, but best quality blooms find a more ready sale. Lilium longiflorums have become more limited and prices are again on the up grade. Gladioli are receiving more attention; they include The Bride, Blushing Bride, Peach Blossom and Akermanii; a few spikes of the giant-flowered varieties have been offered during the past week. Sweetly-scented Paeonies are arriving from France in good condition, white blooms being most in demand.

Business continues very brisk in the pot plant department, the bedding season being now in full swing, and there is also a good demand for flowering plants for decoration purposes. The most prominent sorts on offer are Hydrangeas in forty-eights and twenty-fours, which vary in price from 2s. to 15s. each; Marguerites, white and yellow; Fuchsias, including some very fine standards; Heliotropes, Ivy-leaved Pelargoniums, Rhodanthe, Rambler Roses, Lilium longiflorum, Mignonette, and a few pink Ericas. Ferns and other foliage plants are somewhat limited in quantity owing to the growers having to deal with large orders for bedding plants.

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples—	
—New Zealand—	
—Cox's ...	22 0–27 6
—Delicious ...	13 0–15 0
—Jonathan ...	13 0–15 0
—Sturmer ...	15 0–16 0
—Dunn's ...	13 0–15 0
—Australian—	
—Delicious ...	14 0–15 0
—Granny Smith	20 0–24 0
—Cleos ...	15 0–16 0
—Dunn's ...	13 0–15 0
—Tasmanian—	
—Granny Smith	17 0–20 0
—French Crab	14 0–15 0
—Sturmer ...	14 0–15 0
Bananas, per bun.... ...	15 0–23 0
Gooseberries, English, per lb.	0 3—0 4
Grapes, English—	
—Muscat ...	7 0–15 0
—Hambro, per lb.	2 6—5 0
—Cape—	
—Waltham Cross ...	10 0–18 0
Cherries, French, per boat ...	6 0–10 0
—per box ...	1 6—2 6

	s. d. s. d.
Apricots—	
—Spanish ...	10 0–12 0
Figs, per doz....	4 0–15 0
Pears—	
—New Zealand—	
—Winter Nelis, per tray ...	5 0—7 0
—Winter Cole	4 6—6 0
—Australian—	
—Winter Nelis	6 6—8 6
—Josephine ...	6 6—8 6
—Glou Morceau	5 6—6 6
—Beurre Bosc ...	7 0—8 6
Grape Fruits—	
—Cape, per case	— 30 0
Lemons, per case—	
—Messina ...	12 0–26 0
Nectarines, per doz.	12 0–36 0
Oranges—	
—Denia ...	20 0–50 0
—Mercia ...	28 0–40 0
—Cape Navels	30 0–32 0
Peaches, per dozen ...	8 0–30 0
Pineapples, case	21 0–36 0
Strawberries, per lb.	3 0–10 0

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus—	
—Devon ...	4 0—4 6
—Evesham ...	1 6—3 0
—Giant ...	6 0–12 0
—Cavillon ...	0 8—0 9
Beans—	
—Worthing, finest, per lb.	1 0—1 6
—Guernsey ...	1 0—1 6
Beet, per bag ...	4 0—6 0
Cabbage, Spring, crates, 24's-30's	4 0—8 0
Carrots, French, per doz. bun.	4 0—9 0
Cauliflowers, Cornish, crates, 18's and 24's	8 0–10 0
Chicory, Belgian	0 3—0 4
Cucumbers, per flat	14 0–18 0
Endive, French, per crate, 18's and 24's ...	7 0—9 0
Lettuce, Cabbage—	
—English, per dozen ...	2 0—4 0
—French, indoor, 48's and 60's	6 0—8 0
—outdoor, 24's	4 0—7 6
Mint, per doz. bun.... ...	2 0—3 0

	s. d. s. d.
Mushrooms—	
—cups, per lb.	1 3—2 0
—broilers ...	0 9—1 3
Parsnips, per cwt. ...	5 0—6 0
Peas, French, per bag ...	4 0—6 0
—English, per lb.	1 0—1 6
—Guernsey, per lb.	1 3—2 0
Potatos—	
—English, cwt.	4 0—6 0
—Jersey, per cwt.	— 16 0
—Spanish, per cwt. ...	— 14 0
—Canary Islands, per case ...	10 0–12 0
—Azores, per case	10 0–15 0
Savoys, per doz.	2 0—3 6
Tomatos, English, per box of 12 lbs.—	
—pink	8 0—9 0
—pink and white	8 0—9 0
—white ...	7 0—8 0
—blue	6 0—7 0
—Guernsey ...	8 0—8 6
Turnips, French, per doz. bun.	8 0–10 0

Remarks.—With a brisk demand ruling for most commodities available in Covent Garden fruit market just now, there is an air of activity in many sections which is helped considerably by the fine weather. Choice fruits, such as Peaches, Nectarines, Melons and hothouse Figs and Grapes, continue to sell well. Australian Apples are in keen demand at slightly higher price levels, while Pears from the same source continue to be popular and move out freely. English Gooseberries have increased in supply, Kent now sending heavy consignments in addition to those from the west of England. Some good Cherries are coming from France and Spain is sending considerable consignments of Apricots. Forced Beans and Peas, as well as best Asparagus, have shown some improvement in demand. New Potatos, however, from all sources, are cheaper. Mushrooms have also realised better prices owing to shorter supplies. Salads continue to do well, and Lettuces in good condition are realising good money. Green vegetables are more plentiful and cheaper, although the few good Cauliflowers available are selling at firm prices. English Tomatos sell well in spite of largely increased supplies, and Cucumbers are maintaining their recently improved price levels.

GLASGOW.

A slight improvement in prices here and there was experienced last week in the cut flower market. Tulips, Roses and Sweet Peas, in particular, suffered from the heat in transit, and the soft and blown condition of the blooms was reflected in the low values ruling. All varieties of Tulips were sold from 1d. to 3d. for 6's; 4d. to 8d. for 12's; and 1s. for specials; while Roses ranged from 1s. to 3s. per dozen; and Sweet Peas, 3d. to 5d. for small bunches; and 9d. to 1s. 3d. for large. Carnations were worth from 2s. to 4s.; Irises, 3d. to 6d. for 6's; special, 8d. to 1s., and 6d. to 1s. 6d. for 12's; Lilac, 4d. to 8d. per bunch; Pyrethrums, special, 10d.; ordinary, 2d. to 3d.; Anemones, 1s. to 2s.; Lily-of-the-Valley, indoor, 1s. 6d. to 2s.; outdoor, 1½d. to 4d.; Paeonies, 1s. per dozen; Lilium longiflorum, 2s. to 3s.; Arums (Richardias), 2s.; Gladiolus The Bride, 6d. to 1s.; Maiden's Blush and Blushing Bride, 1s. to 1s. 3d.; Double White Narcissi, 2½d. to 4d.; N. recurvus, 1s. to 1s. 6d.; and Asparagus, 9d. to 1s. 6d.; and trails, 2s. to 3s.

The fruit market was quiet and steady. Cheddar Strawberries realised 2s. 6d. to 3s. 6d. per lb.; Pineapples, 3s. 6d. to 4s. each; Melons, 4s. to 7s. each; home-grown Grapes, 3s. 3d. per lb.; Gooseberries, 3d. to 4d. per lb.; and Cherries, 16s. (20 lbs.). Australian Pears (Jefferson), sold at 7s. 6d. to 8s. 6d. per box; New Zealand Apples (Jonathan), 15s. to 16s. per case; Grape Fruits, 16s. to 24s.; and Oranges, 25s. to 35s.

There was an active demand for salads. English Lettuces realised 1s. 6d. to 2s. per dozen; Dutch, 2s. 6d. to 3s. 6d.; Scotch, 2s. to 4s.; Radishes, 4s. 6d. per dozen bunches; Syboes, 6d. per bunch; and Cucumbers, 5s. to 7s. 6d. per dozen. Guernsey Peas sold at 1s. 3d. per lb.; Beans, 1s. 6d. to 1s. 8d.; Asparagus, 3s. to 4s. 6d. per bunch; Carrots and Turnips, 1s. to 1s. 2d.; Scotch Tomatos, 1s. to 1s. 2d. per lb.; Guernsey Tomatos, 9½d. to 10d.; and Mushrooms, 2s.

SCHEDULES RECEIVED.

Portsmouth and Southsea Horticultural Society.—Summer Show to be held on Southsea Common, on Wednesday, Thursday and Friday, July 24, 25 and 26, 1929. Secretaries, Mr. F. Baker, N.D.H., and Mr. E. J. Meredith, Alexandra Park, Portsmouth.

Reigate and District Gardeners' Association.—Horticultural Show and Floral Fete, at The Priory, Reigate, on Wednesday, July 10, 1929.—Secretary, Mr. W. A. Dobson, Mabledon, Reigate Hill, Reigate, Surrey.

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THE
Gardeners' Chronicle
No. 2216.—*SATURDAY, JUNE* 15, 1929.

CONTENTS.

Allotment holders and unemployed pay ... 435
Alpine garden—
  Dianthus subacaulis 441
  Pentstemon Six Hills Hybrid 441
Apples, bitter-pit of Australian 436
Book, notice of—
  Hair dyes and agriculture 447
Chile and the Andes ... 445
Down House, Charles Darwin's home ... 437
Fruit garden—
  Strawberries, strawing 448
Fuel and heating ... 447
Glasnevin, notes from 441
Indoor plants—
  Celsia Arcturus ... 440
Iris Society, the ... 435
Irises, bearded, in St. James's Park ... 435
Ivy, the destructive ... 449
Kew, notes from ... 442
Market fruit garden ... 447
Obituary—
  Thrower, Joseph ... 453
  Harvey - Gibson, Robert John ... 453
Plants new or noteworthy—
  Ourisia alpina ... 443
  Ourisia macrocarpa 443
Potato sickness, control of 436
Problems of plant life 446
Red spider, naphthalene as a remedy for 436
Societies—
  Derbyshire Horticultural 451
  Iris Society... ... 450
  Royal Horticultural 452
  Three Counties Agricultural 451
Stewart, Mr. W. E. ... 436
Synnotias 442
Trees and shrubs—
  Crabs, flowering ... 440
  Enkianthus campanulatus 440
  Syringa villosa and S. Wilsonii ... 440
Vegetable garden—
  Celery 448
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 444
Week's work, the ... 438

ILLUSTRATIONS.

Erigeron leiomerus 441
Exochorda grandiflora at Kittoes, Bishop's Teignton 449
Iris Joan Curtis 437
Lysichitum camtschatcense var. album at Glasnevin 439
Ourisia alpina and O. macrocarpa 443
Stewart, Mr. W. E. 436
Synnotia bicolor; S. Metelerkampiae 442
Ward, Mr. F. Kingdon's, tenth expedition in Asia, views of 444, 445

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 59·5°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, June 12, 10 a.m. (Greenwich time). Bar. 30·1. Temp. 60°. Weather, dull.

The Iris Society.

YOUNG in years, the Iris Society has already done excellent work on behalf of an increasingly popular garden flower, and its success is largely due to the fact that it counts among its members those whose names have become famous as raisers and cultivators of Irises. Although Mr. J. G. Baker, of Kew, aroused horticultural interest somewhat when, in 1892, he finished his *Handbook of the Iridae,* it was left to Sir Michael Foster to collect species, raise hybrids and cultivate Irises in such a way as to fire the enthusiasm of those who already foresaw the value of the Iris as a garden plant. The Japanese had long since devoted attention to the improvement of Iris laevigata, and given to us the race already known to gardens as Kaempfer Irises, but whereas comparatively few can provide the moist conditions in which these Irises delight, there are thousands who are able to cultivate the broad-leaved, bearded Irises, because many varieties are excellent plants for town gardens. The Iris Society concerns itself chiefly with the tall, bearded Irises, and certainly these are a fine class; there were good garden varieties even so far back as the days of Iris trials at the Royal Horticultural Society's Gardens at Chiswick. Then, however, the groups entitled aphylla, variegata, germanica, squalens, neglecta, and others, were fairly well defined, but now these groups, together with I. pallida and I. Cypriana, and others, have been merged into one another and form the garden section known as tall, bearded Irises. Apart from Sir Michael Foster, probably no individual has contributed more to the success of this group, and incidentally to the success of the Iris Society, than Mr. George Yeld, V.M.H., a veteran raiser whose seedling Irises we admired at York more than thirty years ago. Sir Arthur Hort and Mr. A. J. Bliss are notable raisers and, happily, as in the case of Mr. Yeld, still with us. But alas! the one man who was regarded as the immediate successor of Sir Michael Foster, as an Iris enthusiast, collector, raiser, grower and botanist, is no more; we refer, of course, to the late Mr. W. R. Dykes, whose beautiful book *The Genus Iris* is likely to remain for long the standard work on the subject to which he devoted so much of his time. Mrs. Dykes has joined the ranks of raisers, and her name must be added to those of her late husband, Barr, Perry, Murrell, Wallace, Bunyard and others, who have enriched our gardens with new Irises. It would be unfair, however, to infer from these observations that the improvement of tall bearded Irises has been confined to our own country. M. Denis and M. Mottet, M. Cayeux and M. Millet, in France, and Miss Grace Sturtevant, Mr. Wister and the late Mr. William Mohr in America must be joined with our own raisers in any grateful thanks we accord to workers among Irises. That American gardeners greatly appreciate Irises was made abundantly evident last week when so many members of the Garden Club of America attended the Iris Show at Westminster, the luncheon, and especially the afternoon reception, where they received a warm welcome from Sir William Lawrence, Bt., President of the Iris Society, and Mr. Gerald Loder, President of the Royal Horticultural Society. But the Iris Society is not likely to be satisfied with its present success; it must go from strength to strength, or fade away into an unambitious show organisation. It can do much in its publications, and has already set a very high standard in floricultural Year Books. We feel, however, that notwithstanding the high garden value of tall, bearded Irises, there is abundant room for exploration and imagination in regard to other sections of the genus Iris and we trust the society will encourage experiment in these directions. An Iris Society, to fulfill its title, must take under its wing the popular and the rare bulbous Irises, Irises for the alpine garden and the woodland, Irises for the unheated greenhouse and for the water garden. There are possibilities and difficulties, of course, but what is possible is often difficult at first, and difficulties overcome often extend the range of what is possible, therefore we hope the Iris Society will encourage the discovery and cultivation of species and natural varieties, the raising of hybrids and garden forms, and experiments in regard to the control and prevention of the few pests and diseases to which Irises are more or less liable..

Bearded Irises in St. James's Park.—The value of the bearded Iris as a flowering subject for town gardens is emphasised by the bright display of innumerable varieties on the margins of the lake in St. James's Park, and which are now at their best. Among the varieties which contribute chiefly to this very charming effect are Gagus, Madame Blanche Pion, Mrs. H. Darwin, Princess Victoria Louise, flavescens, Ballerine, Hamilcar, Innocenza, Tamar, Afghan Prince, Fro, very fine; Alcazar, Lent. A. Williamson, Prospero, Titan, Queen Caterina, pallida var. Como, Madame de Stael, Prosper Laugier and pallida var. odoratissima. On the small, round island at the Palace end of the lake Iris sibirica and Iris orientalis var. Snow Queen are flowering gaily, while further colouring is provided by bright beds of Violas, Rehmannia angulata, moisture-loving Primulas, and various richly-coloured Mimulus hybrids, brightest among which is the dwarf Mimulus Whitecroft's Scarlet.

Mr. C. Savidge.—Mr. C. Savidge has been appointed Assistant Horticultural Lecturer at the Cheshire School of Agriculture. He was previously for two years Assistant Horticultural Lecturer to the Norfolk County Council, and carried out trials against capsid bugs, etc. Before this he had been for six years on the fruit and market garden belonging to Mr. Newborn, of Wisbech, and has had experience with Colonel Clayton of the same district. Mr. Savidge was trained at the Kirton Farm Institute, Lincolnshire, and at Reading University. He holds the Royal Horticultural Society's General and Teachers' Certificates.

"Hardy and Half-hardy Plants."—Part II of this new publication is as interesting as the initial effort, and contains a coloured plate of Kneiffia (Oenothera) fruticosa var. Youngii. The other plants illustrated are Cynoxylon floridum, better known as Benthamia fragifera; Corysanthes macrantha, the New Zealand Nauticus Orchid, not in cultivation in this country; Calceolaria Fothergillii, a distinct Slipper-wort from the Falkland Islands; Meconopsis heterophylla, Lathyrus pubescens, Citrus trifoliata, Sarracenia purpurea, Morisia hypogaea, Philesia buxifolia, Castilleja liniariaefolia, Primula Paulinae, Arisaema triphyllum, Glaucium flavum, Epigaea repens, Gladiolus edulis, Iris Delavayi, Chamaescilla corymbosa, Tecophilaea cyaneocrocea, Berberis Wallichiana and Asplenium Petrarchae.

Allotment Holders and Unemployed Pay.—Thousands of allotment holders in South Wales and other places who were unemployed, have been in constant fear of losing their unemployment allowance by working on their allotments during the day time. In certain districts the men were warned that they were likely to forfeit unemployment pay if they continued to work their plots instead of devoting the day to looking for employment. The National Union of Allotment Holders took the matter up with the Ministry of Labour, and obtained an assurance that, provided a man loses no opportunity of seeking employment, his work on the allotment will not jeopardise his claim to unemployment pay.

Leeds Flower Show.—The annual Leeds Flower Show, organised by the Roundhay (Leeds) Horticultural Society, will be held this year on Tuesday and Wednesday, July 16 and 17. A few years ago, this show was nothing more nor less than a friendly competition between gardening neighbours; now, it is one of the finest shows in the north of England, and the site—the beautiful Roundhay Park—is admittedly one of the finest natural show grounds to be found. The Secretary is Mr. W. F. Kitchingman, 8, York Place, Leeds.

Our American Namesake—Although we have no real connection with our American namesake, *The Gardeners' Chronicle of America,* we take a fraternal interest in this excellent journal, which claims to be the only "all-gardening" magazine in America. It is a monthly, not a weekly publication, and is priced at 25 cents. The May issue is of particular interest to English readers, as it contains an article by John Birkentall, entitled, "The Famous Kew Gardens," in which the writer states—no doubt with truth—that every year thousands of American visitors to these shores go to Kew as part of their exploration of London and its vicinity.

A New Open Space for Manchester.—On June 5, the Manchester City Council approved a scheme for the purchase, from Lord Egerton, at the nominal price of £450 per acre, of an area comprising one hundred acres, at Alexandra Park, on the south side of the city, formerly used as an aerodrome. The site is to be converted into a "public park, open space, recreation ground or exhibition or show ground." Not less than twenty acres is to be fenced off as a recreation ground, not to be encroached upon except for use in connection with any show or exhibition on the remainder of the land, and Lord Egerton stipulates that no portion of the land is to be used for aviation, motor or motor-cycle races, or for mechanically propelled swings or roundabouts. Not more than eleven acres are to be covered at any time with buildings, and these shall only be for shows and exhibitions.

Experiments at the Kirton Agricultural Institute.—The Kirton Agricultural Institute has just issued a most interesting Report and Summary of results of experiments carried out during 1927. The experimental work undertaken in connection with the production of Potatos and Sugar Beet has been extensive, and the contents of the *Report* disclose vital facts discovered in the cultivation of both. The results of different manuring of early and maincrop Potatos, and the trials of Scotch "seed," mature versus immature, and of Dutch "seed," should be of great interest to all agriculturists. Valuable information is also given on the cultivation of Wheat, spring Cabbage, Peas, Broccoli, etc. Another section of the *Report* deals with plant pathology, pests, and the weather during 1927. Primarily, the results of the experiments are published for the information of residents in the Holland division of Lincolnshire, to whom they are issued free, but to those outside the division the *Report* is obtainable at a cost of 1s. 1d. post free, on application to The Principal, The Agricultural Institute, Kirton, near Boston, Lincolnshire.

American Gardens at Saltwood.—By the kindness of Mr. Alfred C. Leney, the American Gardens at Saltwood, near Hythe, Kent, are opened to the public on a few Wednesday afternoons during June. During Whitsuntide, when they were also thrown open, many visitors enjoyed the beauty of the Rhododendrons, Azaleas, Magnolias, flowering Cherries, Camellias, Pyruses and other early-flowering trees and shrubs, while Tulips were glorious in a dell where Narcissi still lingered and Forget-me-nots made sheets of blue. These gardens were made many years ago on a barren, peaty site, by the late Archdeacon Croft, Rector of Saltwood, with the skilled assistance of the late Mr. W. Acomb, who had an early training in Messrs. Backhouses' Nurseries at York.

Beautifying South Wales Mining Dumps.—The conversion of heaps of mine refuse into gardens is work that will have the blessing of all and the help of many who love flowers and gardens. The process of conversion is being carried on in South Wales and especially in Monmouthshire, where the Pilgrims' Garden Association is making waste places beautiful by planting and tending shrubs and flowers and making desolate areas places for rest and recreation.

American Lady Horticulturists at Kew.—The party of lady members of the Garden Club of America now on a visit to Britain, spent the afternoon of Monday, June 3, at Kew. To the number of nearly one hundred they were welcomed at the main entrance to the gardens facing Kew Green, by the Director, Dr. Hill, and several members of the garden staff. During an extended tour of the pleasure grounds and greenhouses, the visitors were particularly impressed with the Azalea Garden and Rhododendron Dell—which were seen at their best, the Rock Garden, glorious masses of the white form of Wistaria multijuga, and the wonderful Tree Ferns and other occupants of the Temperate House.

Naphthalene as a Remedy for Red Spider.—A writer in a German contemporary recommends the use of naphthalene powder as a remedy for red spider in hothouses, as being simpler in application and cheaper than hydrocyanic acid gas, and also less likely to injure the inmates of the house. The quantity used is five kilogrammes to every one hundred square yards of ground area; it is strewed on the ground, and the house—the atmosphere in which should be damp—closed for thirty-six hours. The evening is the best time for the operation (which should be performed preferably in dull weather), as it may then be closed for two nights and only one day. All the red spider will be found to be dead when the house is opened, but it is advisable to repeat the operation a fortnight later, so as to kill all insects which have hatched out since the first batch. On fruits, the naphthalene is stated to have no effect at all; and the slight smell which is noticed afterwards on Cucumbers can be got rid of by laying the Cucumbers for a few hours in some fresh grass.

Legacy to Gardener.—The late Mr. James Charles Ellard D'Esterre, of Elmfield, Millbrook Road, Southampton, who died on January 5, left £75 to his gardener, Mr. Bertram J. Morley.

Mr. W. E. Stewart.—About a month ago, Mr. W. E. Stewart entered upon his new duties as horticultural assistant to Mr. W. W. Pettigrew, V.M.H., Superintendent of the Manchester Public Parks. It must be obvious that such a young man must have made excellent use of his opportunities, otherwise he could not have secured his present position in view of the keen competition for it. Mr. W. E. Stewart is the son of Mr. W. Stewart, N.D.H., Superintendent of the Royal Hospital Gardens, Chelsea, and under whom he received his early training. He studied botany at the Chelsea Polytechnic and took the surveying course at the Regent Street Polytechnic. He obtained experience in landscape gardening while with Mr. G. G. Whitelegg, Chislehurst; then followed a further period of training at the Royal Gardens, Kew, after which Mr. Stewart extended his experience in the garden-crafts department of Messrs. Bakers, Wolverhampton. He then became an assistant in the Royal Parks, London, under Mr. T. Hay, M.V.O., V.M.H., and so to Manchester.

MR. W. E. STEWART.

The Control of Potato Sickness.—During recent years severe losses have been incurred by Potato growers in Lincolnshire, Yorkshire, Lancashire and other counties as a result of a complaint known variously as "Potato Sickness," "Potato Eelworm," and "Potato Dab," so that growers in general will welcome the results of Mr. E. E. Edwards' investigation of this trouble and of methods for its control, which appear in the June issue of the *Journal* of the Ministry of Agriculture (Vol. XXXVI, No. 3). It was previously thought that the trouble was due to unsatisfactory conditions of soil fertility, but the results of the experiments designed to ascertain the real cause, point very much to the eelworm, Heterodera schachtii, and the fungus, Corticium Solani, as being the real culprits, as non-sterilised soil, known to contain these two organisms, and sterilised soil innoculated with them, gave rise to infected plants, while plants grown in clean, sterilised soil were perfectly healthy. In the matter of control, applications of various chemicals to the soil were tried, those giving the most promising results being drained creosote salts (a name applied to a crude naphthalene containing small percentages of other coal tar products), carbon disulphide, calcium cyanide and calcium cyanamide. Tables showing the crop returns from the various treatments, together with the cost per acre, are given, and it would appear that the drained creosote salts are likely to prove of most economical value in the control of this serious Potato trouble. Mr. Edwards concludes by stating that these salts are worthy of further trial (the cost of the dressing was £4 per acre), and suggests: "This chemical should be broadcast twelve days before the Potatos are planted, at the rate of about 8 cwts. to the acre, and then immediately ploughed in to a depth of six inches."

American Gooseberry Mildew in Scotland.—The Department of Agriculture for Scotland, in accordance with the provisions of the American Gooseberry Mildew (Scotland) Order of 1920, intimates that occupiers of nurseries on which Gooseberry bushes are grown for sale, or with a view to the sale of the fruits to factories, are required to give immediate notification to the Department or local authority of any outbreak or suspected outbreak of American Gooseberry mildew on their premises. They are also prohibited from selling or removing any bushes or fruits affected by the disease, except under the authority of a licence granted by the Department. The Department is authorised by the Order to deal with any grower who fails to take steps to combat the disease.

Bitter-pit of Australian Apples.—An account of the co-operative work carried out by the Department of Agriculture of Western Australia, and the Council for Scientific and Industrial Research, on Bitter-pit of Apples in Australia, with special reference to the variety Cleopatra, has been compiled by Messrs. W. M. Carne, F.L.S., H. A. Pittman, B.Sc.Agr., and H. G. Elliot, and issued as *Bulletin* No. 41 by the Council for Scientific and Industrial Research of the Commonwealth of Australia. To summarise this work, which is well illustrated, it is stated there are two distinct bitter-pit diseases of pome fruits in Australia (1) the true bitter-pit, which originates almost solely in fruits in store, and (2) "cork," a disease which originates on the fruits while still on the trees, and never in store. "It is the former disease which constitutes the most serious defect of Australian Apples in European Markets." The non-parasitic spot diseases are clearly defined in the work, and classified as Jonathan spot, cork, and true bitter-pit, while cork, originally defined by Mix, has been re-defined and has been extended to include (a) internal cork, (b) crinkle cork, (c) blotchy cork, which is the chief form of the bitter-pit occurring on Apples while still on the trees, in Australia, and (d) drought-spot cork, all of which are discussed and fully described. The true bitter-pit, or storage bitter-pit, has been identified in two forms:—(a) mild pit, with small, rather inconspicuous surface lesions, occurring in both cold and ordinary storage, and (b) severe pit, characterised by relatively large pits, dark in colour, and occurring only in cold-stored fruits. Storage pit is shown to occur in fruits of susceptible varieties when picked while immature. ‘Picking maturity" and "full maturity" are discussed and defined, together with various methods of testing maturity, starch testing for picking maturity, and the "pressure tester" being dealt with at length. It is finally stated, in this comprehensive work, that Apples for export, if loss by bitter-pit is to be reduced to a minimum. should not be picked until they have reached the stage defined as "picking maturity," and, having been gathered, they should be placed in cold storage so soon as possible: exposure to warm temperatures increases the liability to internal breakdown, as also does gathering the Apples after they have passed the "picking maturity" stage. A very valuable contribution to the somewhat limited data concerning bitter-pit of Apples.

Association of Economic Biologists.—The Annual Field Meeting will be held at Cambridge, on Friday, June 21, and the following programme has been arranged:—The party will meet at the railway station, Cambridge, at 11.38 a.m. (Liverpool Street, 10.5). They will then proceed by No. 2 'bus starting from Market Street to the University Farm, where, by the courtesy of Sir Rowland Biffen, they will inspect the experimental plots and greenhouses. Members should provide themselves with sandwiches. After tea (1s. 6d. per head) the party will return by 'bus to Cambridge, where, by the courtesy of Sir William Hardy, they will visit the Low Temperature Research Station. An informal dinner for members, both ladies and gentlemen, will be held in Christ's College, on Friday evening, at 7.30 p.m. Members may bring guests. Arrangements have been made whereby not more than thirty of the party may be accommodated in Christ's College for the night. The charge for dinner, accommodation, attendance and breakfast will be 15s. 6d. per head. Lady members may obtain accommodation at the following hotels: The University Arms, the Blue Boar, the Lion, or the Belle Vue. On Saturday, by the courtesy of Professor Stanley Gardiner, a party will leave Cambridge at 11 a.m. and visit Wicken Fen, returning at about 4.30 p.m. Lunch and tea will be provided by Professor Gardiner. Members who wish to attend the above meeting are requested to notify the General Secretary, Dr. J. W. Munro, Imperial College of Science, London, S.W.7, before June 17, of their intention to do so, and to specify whether they wish:—(1) to attend the dinner, and if they propose to bring guests; (2) to sleep in College on the night of June 21; and (3) to attend the excursion to Wicken Fen.

Down House, the Home of Charles Darwin.—On June 7, Down House, at Down, Kent, the home of Charles Darwin from 1842 to 1882, and now held in custody for the nation by the British Association, was formally declared open to the public, many distinguished persons being present at the ceremony, including members of the General Committee of the British Association, representatives of Darwin's family and of Societies with which he was associated, and other distinguished guests, the chair being occupied during the short ceremony by Sir William Bragg, Chairman of the British Association, Sir Arthur Keith being the chief spokesman. The acquisition of Down House by the Association is the direct outcome of an appeal by Sir Arthur Keith, who, in concluding his presidential address on the present position of Darwinism, at the meeting of the British Association at Leeds in 1927, made a strong plea for the preservation of Down House as a memorial to Darwin, and the appeal had scarcely been made before a telegram was received from Mr. George Buckston Brown, F.R.C.S., stating that he would buy the property. Mr. Brown acquired Down House from Professor Charles Galton Darwin, grandson of the famous naturalist, and gave it to the Association with a generous endowment for its maintenance and preservation, at the same time expressing a wish that the property be regarded as a gift to the nation, and that the public be admitted without charge. Down House has now been restored so nearly as possible to the condition it was in when occupied by Darwin, who spent the last forty years of his life there. In America, a Committee has been appointed to co-operate with the British Association's Committee in an endeavour to recover so much Darwiniana as possible, and already many Darwin relics have been brought together at Down House, which will stand as a lasting memorial to Charles Darwin, the greatest of all naturalists.

Window and Front Garden Competition in Dublin.—It may be taken as a sign of good horticultural times for Dublin that the Independent Newspapers, Ltd. (proprietors of the *Irish Independent*, *Evening Herald*, etc.) have seen fit to inaugurate for that city a Front Garden and Window-box Competition in which the successful town and suburban amateur gardeners will receive at least £100 in cash prizes. The Dublin Garden and Window-box Guild is probably responsible for this generous stimulus, for this almost nebulous body, without money and with the patronage only of the far-seeing few, has for the past two years carried out a most successful competition which, although confined to some 8,000 occupants of dwellings erected under municipal housing schemes, attracted considerable attention. The competition is divided into four classes, two for front gardens and two for window-boxes, and all governed by the valuation of the house or flat; the prizes are £10, £5 and £2 10s., respectively, with ten consolation prizes of £1 in each class. The Irish Independent Newspapers, Ltd., are to be congratulated on their enterprise in making this big effort to cater for the rising popularity of gardening among the masses, whose individual requirements may be negligible, but whose collective order would certainly be appreciated by many houses in the trade.

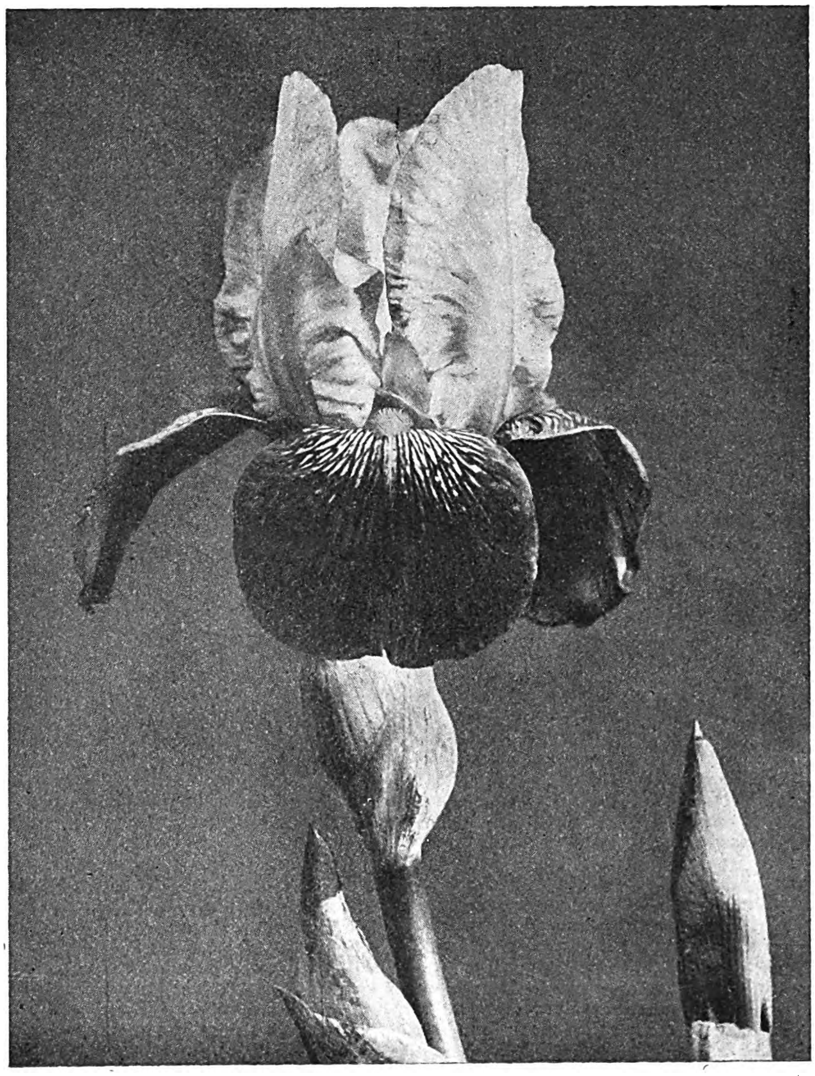

FIG. 219.—IRIS JOAN CURTIS.
Silver Medal, Iris Society, June 6. Shown by Mr. Amos Perry.
(see p. 450).

Appointments for the Ensuing Week.—TUESDAY, JUNE 18; York Gala (three days); WEDNESDAY, JUNE 19: Cheltenham Spa Floral Fête (two days); Royal Norfolk Agricultural Society's Show (two days). THURSDAY, JUNE 20: Newcastle and District Horticultural Society's meeting. SATURDAY, JUNE 22: Leeds Paxton Society's Hydrangea Show.

"Gardeners' Chronicle" Seventy-five Years Ago. — *Kilmarnock Weeping Willow.* — This beautiful weeping plant having lately attracted attention, its history may not be uninteresting. There lived, in a sequestered corner of Monkwood estate, near Ayr, an aged botanist, named James Smith, an enthusiastic lover of plants, and a zealous collector. From him, Mr. Lang, nurseryman, Kilmarnock, purchased one plant, about ten years ago. Afterwards Mr. Lang procured a few more plants from Mr. Smith; and as the old gentleman died shortly after, he never had an opportunity of ascertaining where he procured the variety. It is probable, however, that he found it growing wild, as the species, Salix caprea or Palm Willow, is one of the most common plants in the country. Mr. Lang has since been engaged in propagating the plant, and nearly one thousand have been sold. Sir W. J. Hooker received two plants of it in spring, 1852, and having observed, during last summer, how exceedingly ornamental it was, he gave Mr. Lang a decided opinion, stating that he thought very highly of it, and that it was much admired in the Royal Gardens at Kew. The tree flowers freely in the month of April, has broad, glossy leaves, every branch is curved gracefully downward, and it is as hardy as the most hardy plant we have, being in fact, a native of the country, and not, like the Salix babylonica, introduced from a foreign clime. The name of Kilmarnock Weeping Willow was bestowed upon it to distinguish it from the common Weeping Willow, the Napoleon Weeping Willow, and the American Weeping Willow; it is quite distinct from either of these varieties, having leaves two inches broad. *Gard. Chron., June* 17, 1854.

Publication Received.—*Handbook of the Parks and Recreation Grounds of the City of Manchester*, by W. W. Pettigrew, V.M.H.; pp. 142, illustrated. The Manchester Parks Committee, Town Hall, Manchester, price 6d. net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Atmospheric Conditions for Orchids.—The spell of bright, sunny weather, with the prevailing dry, easterly winds, experienced during the latter part of May, made it difficult to maintain a genial atmosphere in the cool houses. To overcome these difficulties successfully calls for close attention to details. Additional shade is needed during the hottest part of the day by the use of an extra blind or a thin coat of suitable shading put on the glass and the blinds used in conjunction with it. Hall's distemper may be diluted with water and applied cold; this water paint is very easily removed later on when not required. Ample ventilation is desirable, both day and night, at this season, but when drying winds are prevalent, discretion is needed when using the ventilators, or the atmosphere in the houses will quickly become dry, in spite of frequent damping down. On the other hand, when the outside conditions are moist and genial, the ventilators may be opened both top and bottom to their full extent. In the cool divisions, fire heat should not now be necessary for several weeks to come, unless there is a spell of cold, wet weather, when a slight warming of the pipes will be beneficial. Thrips, etc., should be kept in check by spraying the foliage with a weak solution of an approved insecticide every fortnight. In low-lying, moist districts, during damp weather, it is not advisable to damp down heavily or very late in the day, especially when the ventilators are in full use, and there is no fire heat.

The Warmer Houses.—The extra sun heat should prove beneficial to most of the occupants of the warmer divisions, provided careful attention is given to shading and ventilation. Atmospheric moisture may be maintained by damping the paths and lower stages as occasion demands, while occasional syringing between the pots and light spraying overhead is beneficial during hot weather. Sufficient ventilation should be given to allow a free circulation of air and to keep the atmosphere buoyant. If the ventilators are closed in the afternoons to secure the necessary rise in temperature, they should be opened again slightly in the evening to keep the atmosphere sweet. In most districts a little fire heat is necessary at night for the warmest divisions; this, with a little air admitted, keeps the atmosphere buoyant. As the growths advance, more water will be needed at the roots each time the compost approaches dryness; saturation for long periods should be avoided. As the growths are nearing completion more light and air should be given to assist in their full development. At this stage the plants should not suffer from lack of water, the quantity being reduced as the growths become complete. Very little water is required to keep them in a normal condition, especially if the flowers are not being produced until a later date. Those kinds which flower on completion of the growth should be given sufficient water to support the plant over the flowering period.

Tall-growing Dendrobiums.—Strong-growing kinds, such as D. Dalhousieanum, D. moschatum, etc., are now commencing to grow, and any necessary repotting may be done, using well-drained pots and a fairly coarse compost of A.1. and Osmunda fibre, used in a rough state, with a little Sphagnum-moss, adding charcoal to keep it open. This should be pressed firmly about the fleshy roots, care being taken to avoid injuring them during the operation. Careful watering is necessary until the roots are well advanced, when copious supplies will be needed each time the compost appears dry. The plants thrive well in the humid and buoyant atmosphere of the warm house. Similar conditions may be afforded to the evergreen section, embracing D. densiflorum and its varieties, D. Brymerianum and D. suavissimum. These Dendrobiums will require more shade during their growing season than the sun-loving D. Phalaenopsis and D. formosum.

HARDY FRUIT GARDEN.

By Henry H. Cook, Chief Assistant Lecturer, Reading University Horticultural College.

March Moth Caterpillar.—Since writing my last notes, I have been thinning the fruits on our bush and cordon Apple trees, and have been astonished at the number of fruitlets damaged by this pest. Not content with devouring the foliage, it will, on occasions, attack the young fruits. Where the fruits are short-stemmed and clustered together, the necessary shelter is afforded for this caterpillar to carry on its destructive work, and every Apple in the truss may be damaged. In some cases the damage is only very slight, but in others the injury may be quite a quarter-of-an-inch deep. These damaged Apples do not fall from the trees as is the case when attacked by the larvae of the codlin moth and the Apple sawfly, hence the importance of thinning. If this is carried out immediately, and a sharp watch is kept for signs of all three pests, much of the trees' vitality will be saved by the early removal of all the damaged fruits. I have found that a pair of Grape scissors is the most useful and handiest implement to use for the purpose of thinning Apples and Pears.

Layering Strawberries.—For very early forcing and, indeed, for any purpose, an early start is essential to secure strong, healthy plants. The best runners are obtained from plantations made the previous year and which have not been allowed to flower. They should be layered into small pots—2½ inch, or small sixty-size pots. The requisite number of pots, with some fairly rich, sifted soil, should be taken to the layering ground and filled as required with the prepared compost. The plantlets should be thinned down to four or five of the best per plant, the pots plunged to their rims in the soil, in alternate rows, in groups of a dozen or so, to facilitate watering, and a plantlet secured in each pot by means of a peg. Moisture is essential to induce rooting, which, if the conditions are favourable, will only take from three weeks to a month. For the general planting the most economical method is to stir the soil between the rows, water it if necessary, and layer the plantlets in groups. Keep them in contact with the soil by placing a flat stone on each stolon. Frequent waterings are necessary during dry weather, and especially so when they are being lifted for transplanting to fruiting quarters, an item only too frequently overlooked, with the result that the roots are often badly broken and bruised. Early fruits may be obtained next season by planting on a south border, from which Potatos have been cleared, and keeping them well supplied with moisture in the early stages of growth.

THE FLOWER GARDEN.

By R. Findlay, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Climbers.—These are now making rapid growth on walls and trellises, and the young growths should be tied in carefully, otherwise they will become a twisted and tangled mass which it will be found impossible to part without destroying the best of the wood required for next year's flowering. In the milder districts of the country and around the coast we often see some of the rarer climbers that usually need the protection of a greenhouse, growing against walls. Hard winters such as we have recently experienced, settle the fate of many of these tender plants. None the less, they are of fairly rapid growth and well worth planting again. Those who have visited gardens where these plants are well-grown have happy memories of pictures it is well worthy trying to repeat. Clianthus puniceus (the New Zealand Glory Pea) is one of the most handsome climbers one could wish to see. Solanum jasminoides, with its delicate white, starry flowers, is a rapid grower in warm, light soils, while S. crispum is hardy enough for the open in favoured districts but is worthy of a place on a wall. Berberidopsis corallina, with its large, spiny leaves and coral-red trusses of flowers continues to flower for quite a long period. Passiflora coerulea deserves to be planted more frequently; likewise the white variety known as Constance Elliott. Both are fairly hardy, but a southern or western aspect is best. Lapagerias should be planted at the base of a cool wall, in sandy peat and leaf-soil; this is often ruined through neglect in watching for slugs which seem to have a special liking for the tender young growths that spring from the base. Lardizabala biternata is a good evergreen for covering walls, reaching between twenty and thirty feet in height. These are a few subjects that might with advantage be tried where moderately mild conditions prevail, but there is no limit to the selection for the mild, humid districts of the south and south-west. All can be procured in pots and planted now, so that they will become well-established before winter.

Hardy Annuals.—Take advantage of moist conditions to thin out annuals to their final distance apart. This is a much neglected part of garden operations and for that reason we seldom see the true beauty of these beautiful flowers. Each plant should have sufficient room for development, according to the kind grown. Stakes, which should preferably be of small, twiggy Hazel branches, should be placed among and around them at an early date, so that the growths can grow through them and find the necessary support without tying.

Perennials.—It is not too late to sow seeds of many perennials and biennials for flowering next season, and this ought to be done wherever there is room for raising a stock. Delphiniums, Lupins, Aquilegias and Campanulas are a few of the commoner kinds that are useful for cutting, and they may be raised at little cost. When sowing, use the best strains only; a good plant needs no more attention than a poor one.

FRUITS UNDER GLASS.

By F. Jordan, Gardener to Colonel Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Pot Strawberries.—The forcing of Strawberries is drawing to a close, and extra fine crops have not been very conspicuous this season. Many plants have been blind, others have produced both small and weak flowers, especially among plants which were layered rather late. Years ago no one experienced much difficulty in obtaining an abundant supply of runners, but Strawberries have deteriorated, and it is wise to obtain an occasional change of stock from a distant part of the country, or buy a few fresh runners yearly. Runners so obtained need not be potted up for forcing, but a few rows put out will give strong plants for runner production the following year. If young plants planted last August and intended to give the annual supply of runners for forcing and planting, have been divested of all their flower spikes, the recent rains will have encouraged an abundance of premier runners. These should be dealt with before they root into the bed; clean pots and good compost should be prepared without delay, and whether three-inch or larger pots are used matters little, provided they are clean and dry, and the compost dry enough to withstand firm ramming. Heavy, calcareous loam is sufficiently rich to grow good plants without the aid of manure; old lime rubble, ground oyster shell and bone meal may be used not only as correctives, but as necessary ingredients, and the longer the compost lies in bulk before use, the better it will be. Watering is always a difficult and laborious operation, but one upon which the success or otherwise of the crop depends, and must never be performed in a careless manner. The judicious use of liquid manure while the plants are growing is of great benefit and assists in the formation of stout and well-developed crowns.

Cucumbers.—As plants in frames will now be in full bearing, where manure is plentiful and frames or pits are well managed, a large summer supply from this time forward should be forthcoming. No time should be lost in clearing out old plants from houses, provided they can be spared. Young plants make rapid progress, and replanting wherever practicable is most profitable and also the most pleasing after the houses have been thoroughly cleansed. If required, frames in which Potatos and other forced vegetables have been grown should be cleansed and planted as they become vacant. After this date, plants grow freely; they should be planted thinly and the young growths frequently stopped to prevent crowding. When in free growth, early morning ventilation should be given, closing the frames again early in the afternoon, and syringing at any temperature ranging from 80° to 100°. If the summer proves extra fine and warm, the plants will require water at least twice a week—not cold, and in driblets, but in liberal supplies given through a fine-rosed can at a temperature of 80° to 90°.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Calceolarias.—The herbaceous Calceolarias are delightful as pot plants when well-grown, and, provided a reliable strain is obtained, flowers in a variety of shades may be secured. Seeds may now be sown in a moderately cool house, as Calceolarias are comparatively hardy and resent too much heat at all stages of growth. Owing to the seeds being so minute, the soil surface should be fine and even and, after sowing, just a fine sprinkling of sandy soil will be sufficient to cover the seeds. Shade the receptacles from bright sunshine and stand them in a cool house, keeping the surroundings moist. When germination is effected, care should be taken to prevent the soil becoming too dry, otherwise the seedlings will be scorched by the sun. The seedlings should be pricked off so soon as they can be handled, in a mixture of loam, leaf-mould and sand, and grown on under the coolest conditions possible. Continue to protect them from strong sunshine, and repot them when necessary; never allow the plants to become starved. Watch carefully at all times for green fly, as this pest will soon ruin the plants if allowed to remain unchecked.

Malmaison Carnations.—As these plants pass out of flower they may be stood in cold frames and allowed plenty of fresh air. This treatment will prepare the young shoots for layering, which may be done at intervals, so that the potting and flowering may be extended over a long season. The best of the one-year-old plants should be selected for growing on next year, and may be potted on into larger receptacles when convenient.

Chrysanthemums.—Where cuttings of Chrysanthemums were inserted as advised, to be grown on single stems in six-inch pots, the plants should now be ready for placing into four-and-a-half inch receptacles, and, in about three weeks' time they may be moved into their flowering pots. Retain the first bud that appears. After potting, the plants may be sprayed frequently in hot weather, and, so soon as the receptacles are filled with roots, apply weak liquid-manure and soot water.

Francoa ramosa.—Established plants of the Bridal Wreath, as this is called, which have been grown under cool conditions, will now be producing flower spikes, and until the flowers are opening, may be fed liberally with liquid manure. F. ramosa is by no means a tender subject, and may be placed out-of-doors if desired to retard its flowering; by introducing batches into a warm greenhouse at intervals, it may be had in flower over a long period. Seeds may be sown now to secure good plants for next season; selected forms may be increased by means of side-growths.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER, Knowle Gardens, Dunster, Somerset.

Chicory.—A sowing of Chicory may now be made, allowing fifteen to eighteen inches between the lines. When the seedlings are large enough to handle, thin them to a fair distance apart so as to secure good crowns for forcing during the winter.

Endive.—Seeds of the Moss-curled Endive may be sown, to be followed in about two weeks' time by a sowing of the broad-leaved Batavian Endive, which withstands the winter better than the Moss-curled type, which is useful for consumption during the autumn, but is very easily damaged by frost and dampness.

Onions.—If supplies of young Onions are required for salads, a further sowing should be made in rows ten to twelve inches apart, which allows ample room for this crop.

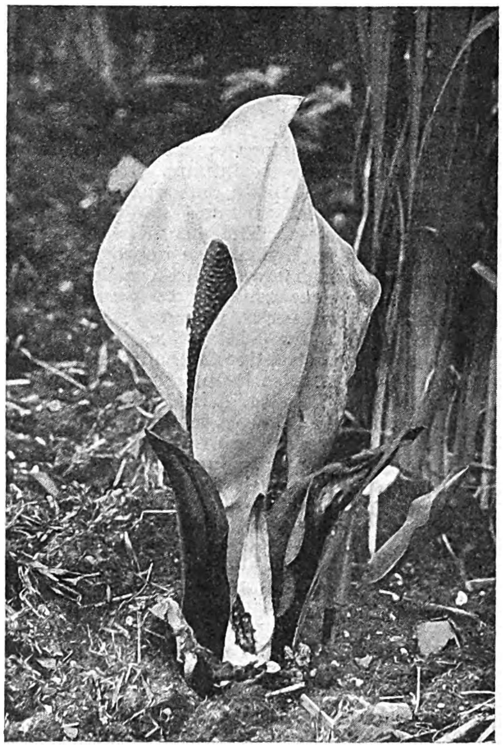

FIG. 220.—LYSICHITUM CAMTSCHATCENSE VAR. ALBUM AT GLASNEVIN.
(see p. 441.)

Parsley.—Where Parsley is wanted during the winter months, a few frames should be made ready and seeds sown in them. The soil surface should be a reasonable distance from the glass, and the lights may be kept off until the weather commences to be cold and wet in the autumn.

Late Peas.—A further sowing of late Peas may be made to supply a late crop. If the ground is dry, the drills should be watered well before the seeds are sown, to hasten germination. When the seedlings are showing give them every attention, and water them frequently if the weather is hot and dry. Earlier-sown plants should be staked before they become too tall.

Late Potatos.—So soon as the haulm is a reasonable height, cultivate between the rows with a "Buco" cultivator, which is very suitable for this purpose, and then earth them up. If the soil is inclined to be poor, give a dressing of an approved Potato manure previous to earthing.

Tomatos.—If these have been well hardened off they may now be planted out, staking each at once, and watering them well.

Thinning Seedlings.—As the seedlings of the various vegetables become large enough, no time should be lost in thinning them, or much injury may result. After thinning, hoe between the rows.

Winter Greens.—So soon as these plants are a fair size, the ground for them should be prepared and the plot divided up for successional crops. See that an early variety is not planted with a late one, for by planting the varieties according to their rotation, the ground will be cleared as they become fit for cutting.

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq., Rosemont, Monkton, Ayrshire.

Vegetables.—Seakale from root cuttings should be examined carefully, and have the shoots pushing up from the crown reduced to one, as a strong, single crown is most desirable. Keep the soil open and free from weeds so long as it is possible to work among the plants without damage to the leaves. Permanent Seakale beds grown for forcing under pots, etc., should be cleared of all debris, well manured and cultivated. Any attempt to flower should be prevented by removing the growth. Being a seaside plant, salt and sand should be used freely in the soil. A sowing of Parsley should be made about this time to ensure a good winter supply. If possible, sow where a frame can be placed over it, to ward off excessive rain as well as frost; or the plants may be pricked out into frames, but open treatment should be given until severe frost threatens. A sowing of an early Pea, such as Pilot, may be made at an early date should space be available; these often come in just as other fresh Peas begin to get scarce.

Annuals.—Seedlings should be thinned before they become drawn or crowded. The distance apart should, in most cases, equal the height to which they are expected to grow, with two feet as a maximum for the taller subjects. Twigs of Birch, Hazel or Spruce afford admirable support for the dwarfer kinds, but stakes are better suited to Larkspurs, Nigella and similar plants. Sweet Peas should be tied at frequent intervals, to keep the growths upright. The tendrils may or may not be removed in the process, but where plants are trained as single stems it is best to remove them. Watering must be attended to when necessary, and a mulch given on dry, warm soils. No feeding should be given until several well-developed flowers have been produced.

Tuberous Begonias.—These should be afforded larger pots before they become pot-bound. A compost consisting of one part fibrous loam, one part partly decayed leaves, and one part old, flaky manure, with one part of sand and charcoal added, suits them. Water thoroughly before turning them out and pot only moderately firmly. Place the plants in a cold frame, keeping them close and shaded for a few days, with only a sprinkling of water, until the roots are again in action; thereafter do not let them dry out at any time.

Winter-flowering Plants.—Young stock of Euphorbia fulgens, Poinsettias, Jacobinias, Coleus thyrsoideus, etc., for winter flowering should now be rooted. The cuttings selected should be short and fairly firm, and every effort to promote a short-jointed growth made by keeping them near the glass while in heat, and removing them to a cool house or frame when established. Cinerarias and Primulas of all kinds should be pricked off into boxes of light soil so soon as they show the rough leaf; a cold frame is the best place for them now. Keep them rather close and shaded for a few days, after which they may be given open-air treatment, except during very hot or very wet weather.

Watering.—The principal watering of the day under glass, should, for the next month or two, take place late in the afternoon, as plants get more benefit from water then, having the cool night in which to enjoy it. Most growing plants should be syringed freely morning and evening on bright days, and the stages, walls and paths thoroughly damped down. The houses, except those containing flowering plants, should be closed for a few hours as the sun declines, but some air should be admitted again before night.

INDOOR PLANTS.

CELSIA ARCTURUS.

Although this greenhouse plant is by no means well-known, nevertheless it deserves a place in every greenhouse, especially where only a little heat is available, and anyone who has never grown a batch of plants before will be amply repaid, not only by its pretty and showy display of flowers, but also for the length of time it keeps in bloom. It is not uncommon for it to commence flowering in August, and with only three successional sowings, to last until April, and when one recognises how valuable flowering plants are for decorative purposes during the dull period of the year, surely this plant is worthy of consideration.

Anyone starting a batch of plants cannot do better than to commence sowing seeds at once in gentle heat. The seeds should be sown in pots or pans covered with sheets of glass. Prick off the seedlings when ready into small sixty-sized pots, and when established remove them to a cold frame. When ready, transfer them to forty-eight-sized pots, potting them in a moderately heavy compost. For the first week after potting, keep them close and only give a sprinkling of water. Afterwards, admit air freely until the lights may be removed altogether, only to be replaced should the weather become very wet. The plants grow best on a cool base, and should be placed either on an ash floor or slates, or upon an inverted pot, as the roots come through so readily, and when moved they receive a check by the breaking of their roots.

Established plants should be generously fed twice a week with a solution of soot and cow manure in liquid form. A little prepared plant food added is an advantage which the plants readily respond to.

It is a good plan to cut out the first flower spikes, and although this throws the plants back about three weeks, six or seven spikes will come up instead of one although, of course, these are smaller, but the plant presents a much more showy appearance.

The chief essential to be borne in mind when growing Celsia Arcturus is cool treatment. After the seeds have germinated, very little fire heat is necessary, in fact, it is detrimental to the plant, as it causes it to become drawn, leggy and useless. I have known some plants to run up in spite of the cool treatment, but this was due to a poor strain of seeds. *Geo. Barton, Tansley.*

TREES AND SHRUBS.

ENKIANTHUS CAMPANULATUS.

This species may be regarded as the hardiest and most satisfactory member of this small genus of very beautiful shrubs, and is a valuable and extremely attractive subject for planting in rather open woodland. It is now, early June, heavily laden with trusses of flowers, ample proof of its hardiness, for these flowers are produced from the terminal buds of short, spur-like growths of last season's formation, and had to pass through the severe winter—therefore, it may be stated fairly definitely that E. campanulatus, a native of Japan, from which country it was introduced to this in 1888 through the agency of Messrs. J. Veitch and Sons, is quite hardy in this country.

It is a deciduous shrub, seldom more than six feet high under cultivation here, but capable, it is stated, of attaining a height of from fifteen to thirty feet. Of erect, rather stiff habit, its growths are produced in whorls and are, in the young state, smooth and tinged with red. The rich, dull green leaves are borne in clusters chiefly at the ends of the shoots; they are one inch to two-and-a-half inches long, and vary in shape from obovate to oval, usually tapering gently at the base, the margins being finely toothed. The foliage takes on vivid orange-yellow and reddish tints in the autumn, and thereby adds considerably to the decorative value of this shrub.

And the flowers also, although not brightly coloured, impart a charm to E. campanulatus which places it high among flowering shrubs for the woodland, suitable for planting in cool, deep, peaty or loamy soil. The blossoms, produced during late May and early June, in drooping racemes sometimes so shortened as to appear like umbels, have bell-shaped corollas pale cream in colour, veined with red, the five rounded lobes also being tipped with red.

E. campanulatus, which is figured in the *Botanical Magazine*, t. 7,059, is strong-growing when happily established in suitable soil, and in conjunction with other peat-loving plants, may be employed to produce charming effects—subdued with regard to the floral display, but vivid and striking in the autumn when the foliage prepares to depart. *M. W.*

FLOWERING CRABS.

Under the heading of Malus in the genus Pyrus come all the flowering Apples usually known as Flowering Crabs. The majority are more effective in flower than fruit.

I think I should put at the head of the list the garden hybrid P. Eleyi, on account of its flowers, foliage and fruits. It is a hybrid between P. Niedwetzkyana and P. spectabilis, and was named after its raiser, Mr. C. Eley, of East Bergholt, in Suffolk. Its foliage opens almost dark crimson, changing to purplish-green, and is beautiful from spring to autumn. Its flowers are wine-red and borne freely, and equally attractive are the fruits in autumn—like purplish-red Cherries, in clusters. This plant flowers in April and May and is, I think, an improvement on P. purpurea, which flowers a little earlier than P. Eleyi. In gardens where space permits, both should be grown, for P. purpurea flowers most profusely, and its Cherry-like, purplish-red fruits are very attractive in the autumn. The foliage is not quite so large as in P. Eleyi.

P. floribunda stands high in the list on account of its profusion of flowers in the latter part of April. The buds are crimson and the flowers nearly white when fully expanded. It forms a low, very twiggy bush or tree, and a good specimen becomes a cloud of blossom each year, for it never seems to fail to flower freely. Bullfinches appear to prefer the buds to other species in my garden, and even with all the damage they do to the flowering buds, the bushes still give a mass of bloom. Personally, I prefer to grow this as a bush rather than as a standard. There is a variety known as atrosanguinea with deeper-coloured flowers and of rather more pendulous habit, but my experience is that it is not so free in flowering or so effective as the other.

P. Sargentii is a delightful plant for any garden, but especially for small gardens, for it does not appear to exceed six feet in height. Its flowers, pure white, are clustered along its somewhat stiff, horizontal branches. The buds are tinged with pink before opening. In the autumn the foliage turns a rich gold and the fruits, which are borne freely and are about the size of a Pea, become bright crimson.

P. baccata is the true Siberian Crab, but the latter name is generally applied to P. prunifolia, which is a better grower. The two species may be distinguished by their fruits. The fruit of P. baccata has a flat top and an eye forming a cavity, and that of P. prunifolia has a protruding eye. While they are attractive in spring when in blossom, I think they are more so when the fruits are ripening in the autumn. They form tiny Apples of the size of a large Cherry.

P. Malus var. aldenhamensis, raised at Aldenham is somewhat similar to P. Eleyi. The flowers are darker and several days later, and the fruits are not unlike ripe Morello Cherries. Another similar hybrid is P. Lemoinei, which I have only as a young bush, and this promises to be as good as P. Eleyi in flower, but I do not know whether it fruits at all, although there appears no reason why it should not do so.

P. arnoldiana is a hybrid of P. floribunda, and while not being of such strong habit, inclines to be somewhat pendulous. The flowers are considerably larger than those of P. floribunda. P. theifera forms a shapely, small tree, and the flowers, which are white, tinted with pink, give one the impression that it is a Cherry and not a Crab. The small, red fruits are often freely borne and are effective in autumn. P. Prattii has larger foliage than most of the Crabs, and this applies also to P. yunnanensis, which has white flowers and broad foliage which turns a rich colour in the autumn.

I have an attractive flowering variety named Lady Northcliffe, which appears to be a little earlier than P. floribunda, with flowers of a similar colour. The fruiting forms of P. Malus, such as John Downie, Cheal's Crimson, Veitch's Scarlet, etc., should be grown for their flowers as well as their fruits, although probably they are more attractive in the autumn when laden with their comparatively large, highly coloured fruits.

P. Tschonoskii has not yet flowered with me, but it has white flowers tinged with pink. The habit is rather upright-pyramidal and its autumn foliage is very richly coloured.

There is considerable confusion in the three following Crabs—P. angustifolia, P. coronaria var. flore pleno, and P. ioensis var. flore pleno. The flowers are comparatively large, double, soft pink and very fragrant. The latter variety is stated to be of poor constitution—perhaps the choice of the stock on which it is worked might have some effect on it; these flower later than the other Crabs.

P. Toringo (P. Sieboldii) is of somewhat bushy-pendulous habit and flowers later than P. floribunda. The flowers are white. A rare species I have here is P. crataegifolia. Its white flowers appear in June, and its foliage is greyish-green, resembling that of a Hawthorn. P. kansuensis is another rare species, the flowers and foliage of which also much resemble those of an American Thorn.

P. spectabilis is of rather upright habit. The flowers are nearly two inches across, of a pale rose shade. There is a semi-double form of this variety known as Kaido, with deep rose flowers.

P. M. var. magdeburgensis is a very ornamental variety of recent introduction and is of strictly fastigiate habit. The flowers are of large size and rich pink. The only plant I have is as yet small and does not show its fastigiate habit.

P. Zumi is of the same class as P. Toringo; the flowers are pink in bud, changing to white when open, and are in clusters of five or six.

This by no means exhausts the list of ornamental Crabs, but I think I have mentioned most of the best for spring effect. One thing about them is that the majority seem to give a wonderful display of flowers every year, no matter what the weather may be. They are best left alone to form shapely specimens, only using the knife when absolutely necessary. *Prunyrus, Hants.*

SYRINGA VILLOSA AND S. WILSONII.

With so many beautiful varieties of Lilac, chiefly of Continental origin, available, the Syringa species are liable to be overlooked in the ordering of shrub borders and gardens. Yet such neglect is not justified, for among these species are many which, although not possessing the heavy inflorescences of the hybrids or, in some instances, the fragrance, are yet singularly attractive, with such distinct characters as to render them well worthy of inclusion in the most select collections of shrubs. Two such species are Syringa villosa and S. Wilsonii, both of which are flowering freely this season, and at the time of writing are making a grand display.

S. villosa has long been known in English gardens and, for that matter, in American and Continental ones as well, for it is the earliest known of the Chinese species. Père d'Incarville was the first to discover it about the middle of last century, north of Pekin—but it was left to Doctor Bretschneider, about the year 1885, to introduce this lovely Lilac to both Europe and America, which fact, no doubt, accounts for its synonym, S. Bretschneideri, under which name it has been described by several authorities (*Bot. Mag.*, t. 8,292), while it has also frequently been referred to S. Josikaea, and given the title S. Josikaea var. eximia.

S. villosa is quite hardy in this country and forms a grand specimen bush of symmetrical form; it is one of those shrubs which, to be seen at its best, requires to be given plenty of room, for it forms a rounded mound ten feet or more high, and as much across, and therefore requires ample space for free development. Incidentally, it is especially useful for planting in towns where the atmosphere is not conducive to the good health of many shrubs.

Even when not in flower S. villosa is a handsome shrub, forming an unbroken mound of rather pale green, oblong-lanceolate leaves, but at this season of the year it is superb, for the foliage is almost hidden from view by the masses of dense, branching racemes of pale rose or nearly white flowers, the unopened ones being of a deeper, rosy-lilac shade.

S. Wilsonii is of different habit to S. villosa, for, whereas the latter develops into a spreading, rounded mound, S. Wilsonii is of erect, columnar habit, attaining, when fully developed, a height of about fifteen feet.

It would appear that the correct name of S. Wilsonii is S. tomentella, but it is so commonly known under the former name, at least in this country, that the use of the latter would only lead to confusion. Its erect branches are ash-grey, and are furnished with elliptic or oblong-lanceolate, pointed, light green leaves, the flowers, which are small and of wax-like appearance, of palest flesh colour, with deeper pink corolla tubes, being borne in large and dense, erect and rather stiff, branching racemes.

Neither of these species presents any difficulty in cultivation, although S. Wilsonii was slightly damaged last winter, but not sufficiently to impair its display of flowers. Like other species, they flourish in deeply-worked, loamy soil, and benefit by a biennial mulching of manure or humus, which treatment keeps them in active growth. They both make grand specimen plants and may be propagated by cuttings or layers, S. Wilsonii, being rather difficult in the latter respect, owing to its erect mode of growth, care being necessary when bending the branches down during the process of layering. *Kent.*

ALPINE GARDEN.

DIANTHUS SUBACAULIS.

This daintly little alpine Pink is now flowering freely on a warm, sunny ledge, and is very charming. For D. subacaulis forms a compact little cushion of small, narrow, glaucous-grey foliage, and above this are borne, on slender, simple stems up to about four inches in height, small, symmetrically-shaped, rich rose-pink flowers, not half-an-inch in diameter and carried singly on the stems, but produced with sufficient freedom as to form a dainty and attractive, light mound of blossom.

D. subacaulis is not difficult to cultivate. It may be grown in the moraine, but does equally well on a sunny ledge in well-drained, light, loamy soil containing plenty of limestone chips. The late Reginald Farrer in *The English Rock Garden*, declined to consider this Dianthus, which hails from the Dauphiny, as a distinct species, although it is treated as such in the Kew *Hand-list of Rock Garden Plants*.

It is a charming little Pink, not difficult to grow nor, under normal conditions, liable to be lost, and is well worth its place on the rock garden. *M. W.*

PENTSTEMON SIX HILLS HYBRID.

This interesting and attractive hybrid shrubby Pentstemon originated in the nursery of Mr. Clarence Elliott, hence the name of Six Hills Hybrid. There is a very fine plant of it in my moraine, and at present it is in full bloom and very attractive. It is believed to have for its parents P. Davidsonii and P. cristatus. It forms a low, spreading plant with pleasing, glossy, dark green leaves, above which rise a vast number of rather large, lavender-coloured bugles, on stems five or six inches high. It came into bloom here in the last days of May.

P. Six Hills Hybrid is growing here in a well-drained moraine with plenty of sand and chips in the compost, and mulched with whinstone chips; here it is thoroughly at home and has grown amazingly and has withstood the last two winters without the slightest injury. The moraine has a gentle slope to the west. *S. Arnott.*

NOTES FROM GLASNEVIN.

Lysichitum camtschatcense var. album.

The enormous yellow spathes of L. camtschatcense are fairly familiar to growers of hardy plants, but the variety with white spathes (Fig. 220) is less common although no less remarkable. It has flowered in the bog garden at Glasnevin for some years with increasing vigour, and this spring surpassed its previous efforts. Arising from among the green tips of the young leaves the pure white spathes are striking. It almost seems as if this white-spathed plant might be a distinct species, as not only are the spathes broader in proportion to their length, but the leaves differ from those of the yellow-spathed plant, which has enormous, deep green leaves, whereas in the white-flowered variety they are shorter, blunter and almost glaucous-green, especially when young. So far, seedlings from the white variety have not been raised, although last year's seeds are still sound, whereas seeds of the type, or yellow, form grow freely, even germinating around the parent plants.

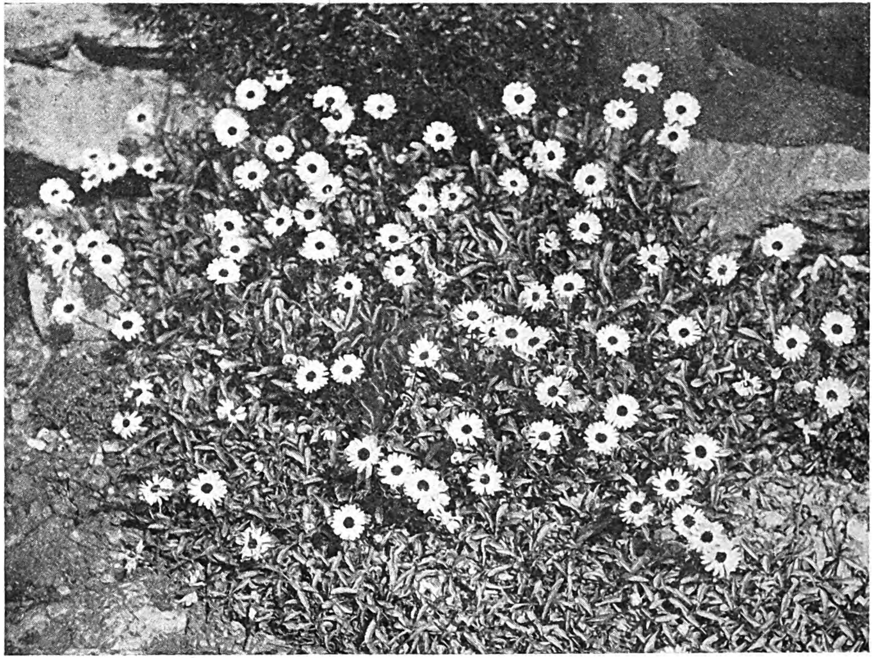

FIG. 221.—ERIGERON LEIOMERUS.

Erigeron leiomerus.

The long spell of dry weather in March, April and May apparently suited this dainty species (Fig. 221) from the mountains of Colorado and Utah. Never before has it flowered so freely, demonstrating well its suitability for exposed dry and sunny positions in the rock garden. Here it is growing in a pocket of rather poor soil close by the path and has been in flower for many weeks, the lavender-blue flower heads rising only a few inches above the leaves which hug the soil. In a genus which contains many beautiful species and hybrids, this is certainly one to be recommended.

Sedum fastigiatum.

This is a Himalayan species of the Rhodiola section, attractive at present by reason of the rich, dark red colour of the sepals and carpels of the female flowers. From a typical woody rootstock the round, smooth stems arise, erect and more or less in a whorl, about six inches high, each terminating in an inflorescence. The fleshy leaves are linear-lanceolate, half-an-inch or so long, deep green. This is a particularly pleasing species which has recently attracted the attention of visitors.

Sedum pilosum.

One of the most enjoyable colour effects in the rock garden at present is provided by a patch of this charming biennial species. The first year it forms attractive rosettes of fleshy, hairy leaves which are now completely hidden by dense cymes of beautiful rose-pink flowers. Although a biennial, this is a desirable plant. Seeds are produced freely and germinate readily, so that by sowing a pinch annually a stock is easily maintained. A sunny position in well-drained soil is essential.

Dianthus caesius var. grandiflorus.

The Cheddar Pink is known in gardens in several forms, including the rather coarse double variety, but in my opinion, the finest is the variety under notice. The flowers, of a bright rose-pink, are almost an inch across, borne a few inches above the glaucous leaves. This came originally to Glasnevin from Mr. A. K. Bulley, of Ness, Cheshire, and is not the least valuable of the many fine and interesting plants we owe to his generosity.

Senecio tyrolensis.

This may be but a form of S. arbrotanifolius with rather more finely cut leaves and neater flower heads, but the brilliant orange-yellow colour is the same. This is a limestone plant of the Southern Alps, according to Farrer, although most botanical works are curiously silent concerning it. An exposed position in well-drained soil seems to suit it. Propagation may be effected by cuttings of the basal shoots. Seeds are uncertain.

Tulipa Sprengeri.

This, the latest of the Tulip species to flower, is also one of the most striking. Reaching a height of eighteen inches to two feet when flourishing, the fiery, orange-red flowers are remarkably effective, particularly when seen in a large colony. It is now flowering on the rock garden here, but the finest colony I have seen grows in Mr. Walpole's garden at Mount Usher, where it has been raised in hundreds from seeds and provides a wonderful display annually. This beautiful Armenian species is worthy of being more generally grown.

Hippeastrum pratense.

I was first attracted by this fine Chilian species at the International Show in 1912, when it was shown in some quantity. It is now in full flower at Glasnevin, in two small beds at the end of the Camellia House, facing south-west. The bulbs have been there for many years now and flower regularly. The orange-red colour appeals to most plant lovers, and the hardiness of the bulbs seems beyond question. I have seen it flourishing equally well on Mr. Barton's rock garden at The Bush, in Co. Antrim, where the climate is like that of parts of Scotland. *J. W. Besant.*

NOTES FROM KEW.

So many shrubs in the outdoor garden suffered last winter from frosts and cold winds that it is doubly pleasing to note and record how well some of the old favourites have withstood the test. I have never seen the Laburnums, the Lilacs, the Pyruses, the varieties of the Common Hawthorn and the Wistarias—to name only five—flowering better.

The Laburnum is one of our most beautiful flowering trees of small size, producing masses of yellow blossoms during the second half of May and in June. The trees are so hardy, easily cultivated and readily raised from seeds, that it is surprising that they are not planted in far greater numbers in shrubbery beds and borders and fringing the woodland.

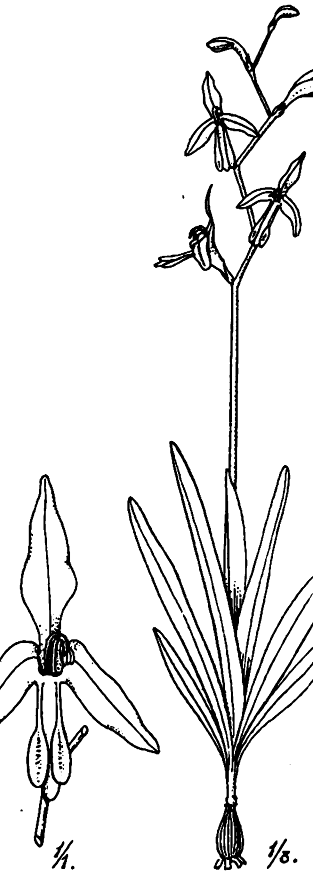

FIG. 222.—SYNNOTIA BICOLOR.

Nearly twenty varieties and hybrids are represented in the Kew collection. A selection of the best for general cultivation should include Laburnum Watereri, L. Vossii, L. vulgare var. intermedium, L. v. var. Alschingeri, L. Latest and Longest, and L. alpinum, the Scotch Laburnum. The last two are particularly valuable because they flower some three weeks later than the varieties of Laburnum vulgare.

Mention must also be made of the remarkable graft-hybrid, Laburnum Adami, which also is flowering very freely this spring. On some trees it may be found necessary to do a little pruning, the Common Laburnum in some cases being inclined to outgrow the purple-flowered hybrid.

The white, pink and red or scarlet varieties of the Common Hawthorn or May are very prominent and attractive on the lawns, in the Crataegus collection south of the Temperate House, and particularly on the banks of the islands in the lake. There is also a great wealth of exotic species and varieties flowering very freely near the Chinese Pagoda. It is only possible to give in these notes a very limited list of the most desirable to plant as flowering trees. These include the varieties coccinea plena (Paul's Double Scarlet Thorn), alba plena (double white), rosea plena (double pink), and coccinea (single scarlet), with Crataegus monogyna var. semperflorens, a dwarf, slow-growing tree or bush, represented by a group of four plants three to five feet high, and covered with white blossoms; C. orientalis, the Oriental Thorn, with distinct, lobed, greyish leaves and masses of white flowers; the Red Haw, C. mollis; C. prunifolia, C. Leeana and the yellow-fruiting Thorn, C. oxyacantha var. fructu luteo.

Most of the flowering Crabs are over or past their best. One notable exception is the Bechtel Crab, Pyrus ioensis var. flore pleno. This has dainty, pale-pink blossoms which are deliciously fragrant and larger than any other Crab, being two to two-and-a-half inches in diameter. Pyrus crataegifolia forms a small, round-headed tree some eight to ten feet or more in height. It is a native tree of north Italy, its pure white flowers and foliage resembling those of a Thorn rather than a Pyrus. The Common Whitebeam, Pyrus Aria, as flowering at Kew at the present time, is a handsome British tree deserving much more attention in our pleasure grounds and parks. Another neglected British tree for open woodland and park planting is Pyrus torminalis, known as the Service Tree.

The Chinese Fringe Tree, Chionanthus retusa, is conspicuous in the Oleaceae collection near the Azalea Garden. A deciduous shrub or small tree, a specimen some six feet in height is covered with snow-white blossoms.

Several specimen lawn bushes of the Chinese Rosa Hugonis are conspicuous with long, arching growths covered with bright yellow blossoms. Large bushes of the Mount Omi Rose, R. omeiensis, are equally ornamental with their elegant, Fern-like foliage and large, four-petalled, white flowers. A large group of the Siberian Rose, R. altaica, in the Rose Dell near the Chinese Pagoda, is a charming sight The creamy-white flowers are three inches across.

The little known Jamesia americana has come through the winter better than most of its near ally, the Deutzia family. A deciduous bush, four to five feet or more in height, it has white flowers, borne freely in small terminal panicles. A native of western North America, it has been cultivated at Kew since 1862.

Very many Spiraeas are in flower; the one of outstanding merit at the moment is a large bush of S. bracteata near the Cactus House. Between five and six feet in height and as much in diameter, the bush is wreathed with rounded clusters of pure white flowers. A native of Japan, the name "bracteata" refers to the small, leaf-like bracts produced on the inflorescences.

In common with several old favourites in the outdoor garden, the severe frosts of the past winter have done no harm to the Wistarias. In fact, all are flowering with, if anything, more than their usual freedom. On several buildings and on the iron, cage-like structure near the Maidenhair Tree, Wistaria chinensis has proved a source of considerable attraction to visitors for some time. About ten or twelve days later in flowering, the lilac and purple blooms of W. multijuga and the white variety alba, have surpassed in attractive beauty the older sort. The branches of the white variety in particular are packed with the long racemes of blossoms on a cage-like structure, near Cambridge Cottage Garden and the Water-Lily House. This floriferous character is largely the outcome of close spur-pruning of the young growths. As the long, twining shoots develop in summer they are cut back several times, at intervals, to within three or four leaves of the base. *A. Osborn.*

SYNNOTIAS.

The genus Synnotia, Sweet, comprises three species of dwarf herbaceous plants belonging to the Natural Order Iridaceae, and the Tribe Ixieae; they are closely related to the Gladioli on one hand and the Ixias on the other. All three species are well worthy of cultivation, and should succeed out-of-doors in warm, sunny localities in Great Britain, in sheltered but open parts of the rock garden in well-drained, rich, gritty loam and leaf-soil. A handlight should be placed over the plants so soon as the leaves show signs of decay, in order to ripen the corms; it should be allowed to remain over them until growth recommences in the spring. In cold localities they should be grown in pots of rich, gritty soil, in a greenhouse from which the frost is just excluded. When growing in a state of nature in their native habitats, Synnotias are usually found among short herbage in gritty or rocky soils in hilly situations.

S. bicolor, Sweet (Fig. 222).—This delightful species was introduced into this country in the year 1786, but is now probably lost to cultivation, The ellipsoid or ovoid corm which is buried about one inch below the surface of the soil, is about as large as a Filbert, and is coated with finely-reticulated or honeycomb-like fibres of a pale or darkish brown colour; it produces a stout, greenish-white stem about one inch long, somewhat swollen where it emerges from the corm; this portion is buried beneath the soil; it bears from six to eight sword-shaped, blunt leaves, from six to eight inches long, with a distinct midrib and many delicate longitudinal veins. They are produced from the top of the short stem in a fan-shaped manner, and are of a delicate pale green colour; there are usually numerous, small, dark purple blotches and bars at the base of each leaf.

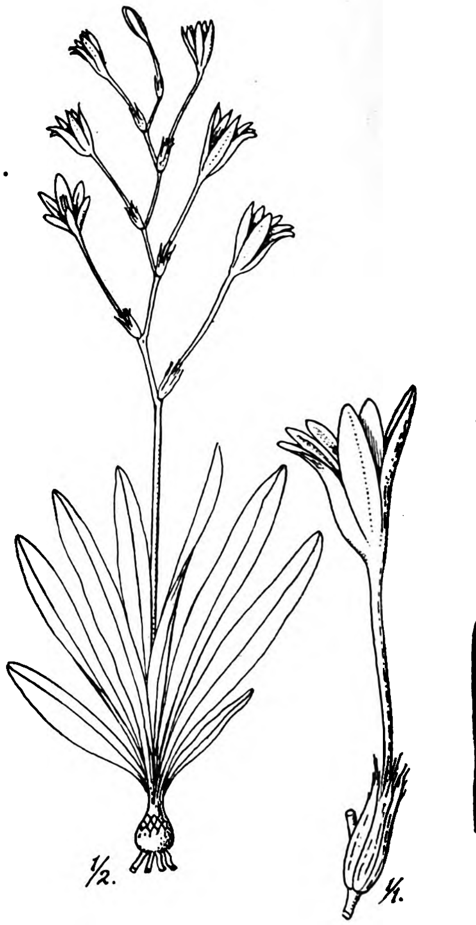

FIG. 223.—SYNNOTIA METELERKAMPIAE.

The flower stem is from six to eighteen inches long, and is slender, grass-like and zig-zagged above among the flowers, which are borne in a loose spike; they number from two to six, and are somewhat widely separated. The spathe-valves or bracts which protect the blossom when it is in the bud stage are oval, thin in texture, about half-an-inch long and deeply lacerated towards the apex; they are green at the base and brown at the tip. The curiously-shaped but attractive blossom has a cylindrical tube about half-an-inch in length, dilated and broadly funnel-shaped at the mouth, where it is divided into six somewhat unequal segments measuring about one-and-three-quarters-of-an-inch across. The uppermost segment is oval, blunt, undulate and tapers to a broad stalk below; it is carried quite erect; the two side segments are similar in shape, but do not taper so much; they are spreading. The three lower segments are long and narrow; the two outermost are shaped like elongated tennis racquets, and the centre one has a broad stalk. In colour the blossoms vary from very pale yellow to white shaded with violet or purple; the three lower segments are rich yellow and project forward like a lip or platform.

The variety Roxburgii, Baker, has the outer coating of the corm composed of fine threads, and the blossoms are lilac-purple throughout.

The type and its variety are found in hilly country in the Cape, Paarl Malmesbury and Van Rhynsdrop Divisions of Cape Colony.

It is also known under the names of Gladiolus bicolor, G. galeatus, Sparaxis bicolor and S. galeata. It is figured in the *Bot. Mag.*, t. 548, under the name of Ixia bicolor.

S. Metelerkampiae, L. Bolus (Fig. 223).—In habit and leaf this handsome species closely resembles the preceding, but differs from it very much in the shape and colour of its blossoms. The ovoid corm, which measures about five-eighths-of-an-inch in diameter, is coated with stiff fibres which form a very pronounced honeycomb-like pattern on its upper half; it is buried not more than half-an-inch below the surface of the soil, and produces from its base about half-a-dozen stout, tough, fibrous roots. The blunt, or slightly pointed, pale greyish-green, sub-erect, sword-shaped leaves, some half-a-dozen in number, are produced in a fan-shaped manner from a very short stem, which is entirely buried beneath the soil; they are from two to four inches in length, about half-an-inch in width, and are frequently wavy on their margins. All their nerves, except the centre ones, are quite inconspicuous.

The flower stem, which is sometimes branched low down, is from six to ten inches tall, grass-like, erect below, zig-zag among the blossoms, which number from nine to twelve, borne in a loose raceme. The spathe valves or bracts are very conspicuous on account of their very pale green ground colour, and pale chestnut-brown shadings. They are oval in shape, about three-quarters-of-an-inch long, and are much torn and lacerated upwards.

The richly-tinted blossoms have very slender, cylindrical, slightly curved tubes, about one-and-three-quarters-of-an-inch in length, which very suddenly expand near the apex into funnel-shaped mouths. The segments of the blossom are very unequal in size, and are carried much more erect than those of the preceding species; the uppermost segment, which is by far the largest, is broadly oblong, with incurved margins, and is carried more or less erect; the two side segments are rather similar in shape, but are smaller, and the three lower ones are smaller still, narrower, and have undulate or incurved margins. The blossoms, which measure about two-and-three-quarter inches in length, including the tube, and about three-quarters-of-an-inch in width, are of a rich violet colour, except the three lowermost segments, which are bright orange, bordered with violet; the orange colour becomes pale towards its centre. This desirable species has not yet been introduced into this country, but is in cultivation in South Africa. It is apparently a very local species, and was originally discovered near Eendekuil, in the Clanwilliam Division of Cape Colony, growing under the same conditions as the preceding species. It is figured in *The Flowering Plants of South Africa*, t. 97.

S. variegata, Sweet.—The corm of this charming plant is about half-an-inch in diameter, and is coated with coarse fibres arranged in a honeycomb pattern. The leaves, from six to seven in number, are produced in fan-shaped manner from a short underground stem; they are sword-shaped, from three to six inches in length, blunt or slightly pointed, and of a pale green colour. The blossoms, which number from three to six, are arranged in a loose spike on a slender flower stem from six to twelve inches tall, in the same manner as those of S. bicolor. The spathe valves or floral bracts are oval, thin in texture, and lacerated towards their tips.

The richly-tinted blossoms, which measure about two-and-a-quarter inches in length and one inch in width, have a cylindrical tube as much as one-and-a-half inch in length, which dilates suddenly near its apex into a funnel-shaped mouth; the upper segment is oval, about half-an-inch in breadth, and is carried more or less erect, while the other five segments which are not so long, are only three-eighths-of-an-inch across. The ground colour of the blossom is dark violet with rich yellow shading on the three lower segments. It is probably closely related to the preceding species, and is found in sandy soil among other dwarf vegetation, and like S. Metelerkampiae, is apparently confined to the Clanwilliam Division of Cape Colony. The plant is also known as Sparaxis leuto-violacea (Eckl.) and S. Wattii (Harv.); it is figured in colour in Sweet's *The British Flower Garden*, t. 150. *A. W. Darnell.*

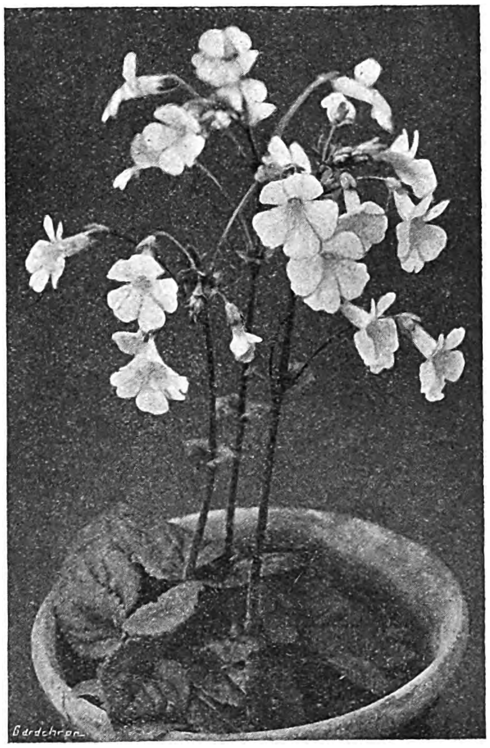

FIG. 224.—OURISIA ALPINA.

PLANTS NEW OR NOTEWORTHY.

OURISIA ALPINA.

The plant shown by Captain McEacharn at the Chelsea Show was Ourisia alpina, Poepp. and Endl. (Comber 1,127), correctly named and reported in your issue of May 25 (p. 385). Unfortunately, the photograph reproduced on p. 391 (Fig. 199) was of Ourisia coccinea or O. elegans (I am not sure which).

You will see from the print that I enclose (Fig. 224) O. alpina is entirely different, the flower being noticeably shorter and more open at the mouth, while, as you state, the colour is pink, not scarlet as in the longer-tubed species.

Another fact which crops up in this connection, and is not generally known yet, is that the Ourisia coccinea commonly grown in our gardens is not true O. coccinea, Pers., but Ourisia elegans, Phil. The true species was shown in May last year and gained an Award of Merit. This was raised from seeds collected by me in 1927. Both species have been lumped under the name of O. coccinea, but are quite distinct. *Harold F. Comber.*

OURISIA MACROCARPA.

Many visitors to the recent Chelsea Show were interested in the fine display of this novelty in the Bodnant collection. I have not had the species long enough to enable me to state anything regarding its behaviour out-of-doors, but I am assured it is quite hardy, and it certainly promises to be a most useful garden plant. Put out in a cool, fairly rich loam in part shade, my specimen (Fig. 225) has made a clump over a foot across of its close-set foliage. The heart-shaped leaves, which are dark green, leathery, bullate and evenly serrated, are from two inches to three inches long. They are glabrous on both sides, but the stalks are hairy and these, as well as the flower pedicels, sepals and leaf margins, are stained with claret colour. The flowers, a good firm white with a yellow throat, are well over half-an-inch across and, individually, rather suggest those of a Nemesia or small Streptocarpus. These blooms, whose whiteness is accentuated by the dark pedicels and calyces, are borne in ample whorls some three inches or more across. As the flowering stalks, rising to about one foot, bear several of these wreathes of blossom in succession, the flowering period is continued throughout the spring and the plant looks like carrying-on well into summer. I understand that the Bodnant stock (Fig. 213, p. 421) was raised from collected seeds sent direct from New Zealand, and the Hon. H. D. McLaren informs me that he has found the species a most reliable garden plant. It is certainly one of the most attractive of the Ourisias that has come my way. *A. T. Johnson, N. Wales.*

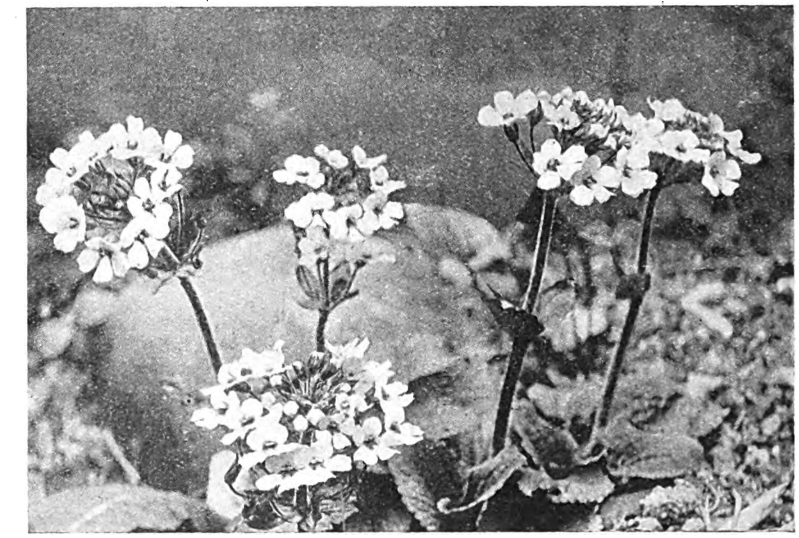

FIG. 225.—OURISIA MACROCARPA.

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XXIII.—A Fresh Start.

We had now to decide on a new plan of action, one in which the Mishmis would co-operate, since without them we could do nothing. Whatever we decided to do must be done quickly, or we would miss the most valuable part of the season; in spite of our early start from the plains, and the comparatively short distance we had to travel, we were now, date for date, worse off than I had been in 1926, when the situation had looked black enough! We discussed many plans during the next two days, but the simplest appeared to be to try to reach Kaso, a fine peak over 15,000 feet high, which lay far back on the Delei-Dou divide, but directly above the village where we had our camp. Everything depended on the Mishmis. I called up the Gam, and although he insisted that there was no water on the mountain, he very sulkily promised to produce two dozen coolies for us. The next thing was to find a camping ground, as high as possible. As to the route, from the village we could see a path going steeply up the shoulder in the direction of the mountain, and on May 19 we started out to explore it.

The ridge was precipitous, but open, the thick forest which clothed the sheltered flank ceasing abruptly along the crest; the exposed flank, which faced due south, was covered with grass, Bracken, and scattered bushes, with bulging outcrops of bare crystalline rock, and was now chrome-yellow with a species of Piptanthus. Climbing up the ridge, we noted the trees along the edge of the forest: Tsuga and with it Magnolia rostrata and Rhododendron sinogrande, Heptapleurum and other Araliaceae, Oaks, Enkianthus himalaicus (Fig. 226) and Acer. At about 8,000 feet we began to find Rhododendrons in flower, including fine specimens of R. megacalyx, with six or seven blooms on a truss. This is a larger form than the plant from the Tsangpo gorge, with smaller, less rugose leaves; it ascends to nearly 8,000 feet in the Delei valley, but does not look constitutionally hardy. Here, too, we met with the first specimens of Larix Griffithii, which ascends to the tree limit at 12,000 to 13,000 feet, but does not form forests by itself. Other Rhododendrons were a gnarled, smooth-barked tree 'Thomsoni' with large trusses of small, purple flowers, just over; a big-leafed, bushy 'Maddeni,' and several epiphytic species including the beautiful, fragrant 'Edgeworthii' (Fig. 227) found in the Seinghku valley in 1926. Other plants were Ilex nothofagacifolia (Fig. 228), a red-flowered Schizandra, and, on the rocks, Cassiope selaginoides and a pink-flowered Vaccinium. But, perhaps, the best thing on the ridge was a small, tree Gaultheria, its bursting leaf-buds squirting jets of scarlet fire into the massed flowers which were sewn tightly along the branches like cream beads. On the way down the ridge, I found a large, foetid-flowered Aristolochia. From the botanical point of view the first reconnaissance was a success; but we found no possible camping ground.

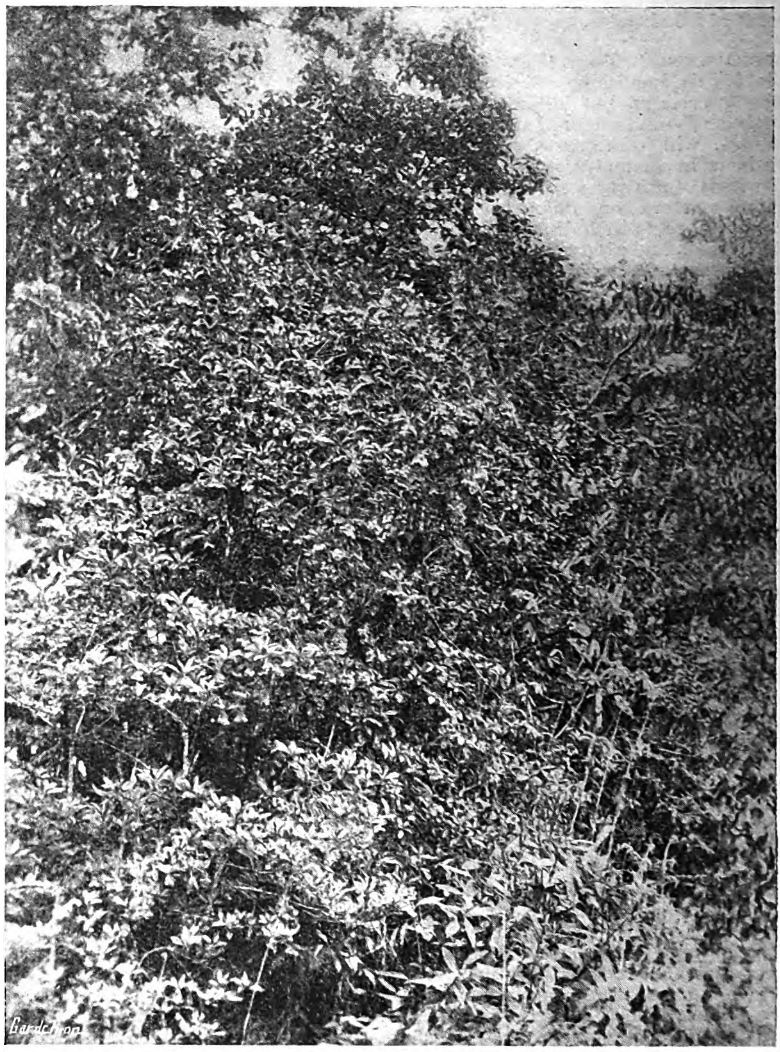

FIG. 226.—DENSE THICKET AND FOREST, WITH ENKIANTHUS HIMALAICUS IN THE FOREGROUND.

Three days later we tried again, Buttercup having volunteered to spend a night on the ridge and explore the path so far as possible. After reaching the point on the ridge where we had turned back before, we entered the rain forest, and again climbed very steeply, until at about 10,000 feet we reached a place where the ridge, changing direction and descending slightly, widened out momentarily at the corner; here, beneath a canopy of big-leafed Rhododendrons, was a possible camping site. The next problem was water, and needless to say, it did not grow on the ridge! This was Buttercup's real quest; and having seen him safely housed in a cosy corner, with blanket and food, and a supply of fire-wood, I returned to the valley.

Next day it was again wet, so it was evident that Buttercup was having an uncomfortable time, and also that he would get no view of Kaso; however, his object was to find water, and, if possible, to reach the alpine region; and he turned up to a late tea that afternoon, and reported. As to the path, he said that it continued indefinitely along the ridge up and down through the forest, and over the cliffs, but that it was hard going in places, as no one had been along it this year, and the snow had weighed down the Bamboos, almost completely blocking it. As to water, he had found several trickles sliding down rock faces or dripping from cliffs, and had reached melting snow, where pools lay in hollows even on the ridge; but he had found no certain and inexhaustible supply anywhere near our camping site. Finally came the botanical report, and here Buttercup opened his rucksac and produced the goods; so I spent a happy hour. Amongst several sprigs of Rhododendron were a 'Sanguineum' with deep port-wine red flowers and a 'Saluenense' with purple flowers, like those of R. calostrotum. Amongst the Primulas were P. vernicosa, a small, purplish-flowered 'Auriculata' from the cliffs, and a charming 'Denticulata' with mops of fragrant, mauve flowers; seeds of this last were collected in the Di Chu valley in 1926, before ever I saw the flowers—which was lucky, for I got no seeds of it in the Delei valley. But the most interesting plant which Buttercup brought back was one which, at a first casual glance, I passed over as a Lloydia; but so remote from the truth was this, that when I looked closely at it, I confessed that it was probably an Omphalogramma! I was certainly on the right track there; but when later in the season, I saw the fruits and seeds, it was evident that it would not fit into that genus either, although it was more Omphalogramma than Primula. It was, in point of fact, a Bryocarpum.

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; March 2, 16, 30; April 13, 27; May 18, and 25; and June 1, 1929.

The position was now thus. We had found a possible camping ground in the rain forest at about 10,000 feet altitude; there was a path up the ridge which, it was now reasonable to assume, continued to the alpine region, and there were flowers. But there was, at the moment, no water; two or three fine days, and the sources found by Buttercup, none of which lay close to the camp, might vanish; the monsoon *might* not break for a fortnight. However, we decided to risk it; we must either climb a mountain here, and that soon, if we wished to catch the June flowers, or abandon the Delei valley and try elsewhere—a counsel of despair.

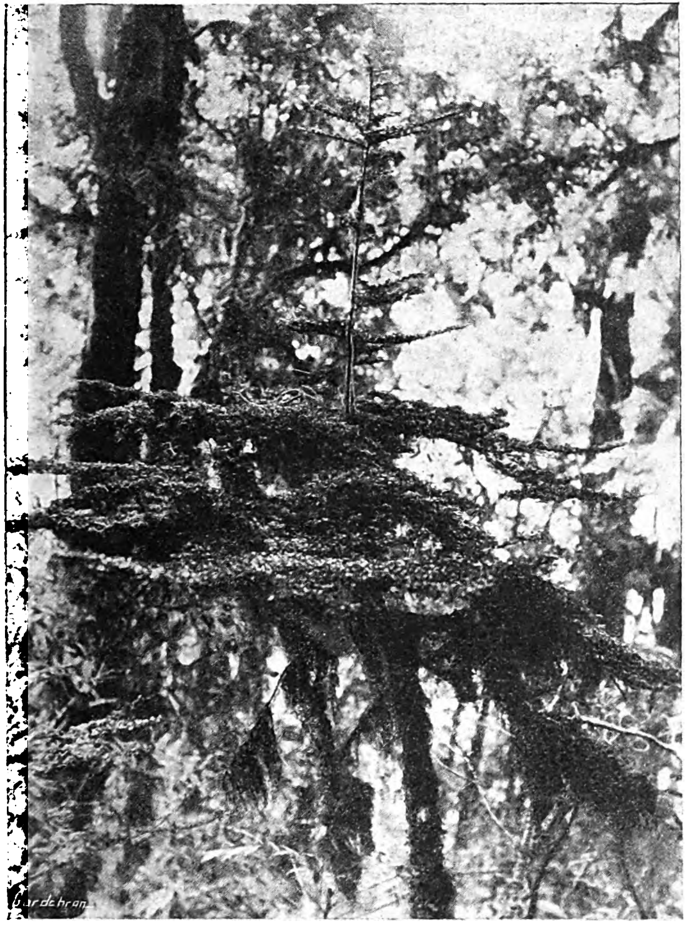

FIG. 227.—ILEX NOTHOFAGACIFOLIA (SHOWING THE CURIOUS TABULAR ARRANGEMENT OF THE BRANCHES.

For the next five days it rained continuously, until I began to think the monsoon had broken already. This would have assured the water supply, but until it turned fine, the coolies could not climb the steep, slippery path up the ridge. All this time I was in a fever of doubt as to whether the Gam would keep to his promise. Meanwhile, we were greatly cheered by the arrival of coolies from Denning, with supplies and mails.

May 28 being fine, we summoned the Gam and made arrangements to start next day. I offered a wage much in excess of that paid to coolies in administered territory (it would have been sheer waste of time to offer less). The Gam promptly raised it, as I knew he would, and I as promptly accepted; so that was fixed with the minimum of friction. Next day we were early on the move. Soon the Gam arrived and then the coolies began to wander in; but by the time we were ready to start we were still ten short of the full complement. The Gam said no more would arrive, but that he would bring the remaining loads up next day; so we left all the rations, stores and spare parts behind, taking food for three days only, and when the sulky Mishmis had had their usual wrangle with us, we actually started. Leaving all the rations behind offered one more hostage to fortune, but we had to take risks.

We now found that the inhabitants of the next village, who had done their best to dissuade us from going, and our coolies from carrying loads for us, had driven spiked Bamboos into the path, in the hope of laming some of us; they were furious at the expedition because we were poaching on their game reserve. However, we had no casualties. The climb proved all we expected for the coolies, and it was late in the afternoon when we arrived at a waterless camp; I was knocked out by a fever attack and did not reach camp until nearly dark. The coolies, having no water, went down the ridge the same evening, but we had brought up two petrol cans of water, sufficient for immediate needs, if zealously rationed.

On the way up the ridge, I noticed that the flowers of Magnolia rostrata, which had been in bud nine days ago, were already over! Five days' rain, of course, had something to do with this, but still — ! I had seen a couple of trees in bloom in the forest, for the first time, and was terribly disappointed with this much-talked-of species. The leaves are so big, and the white flowers, at the ends of the branches, so small, that except under very favourable conditions, they can scarcely be seen at all. The tree itself, which may grow a hundred feet high, with leaves twenty inches long and six inches wide, is seen at its best in April when the leaf-buds are bursting, and in November when the leaves are falling to expose the red, Pineapple cones.

Arrived at our camping place we had to clear the ground a bit before we could put up the tents. Then we rigged up baths with canvas sheets to catch the rain water from the tent flies; but scarcely any rain fell for several days, and we were dependent on a precarious supply from Buttercup's well, which was twenty minutes' journey along the ridge. This was quickly exhausted, and then we had to go to the water cliff, about three quarters of an hour up the ridge, and leave a bucket there to be filled by the constant drip from above. Our Mishmi interpreter went once a day for water and returned with a petrol can full; about ten days later I found a spring right below our camp, and not far down the face, so we made a path to it.

Immediately afterwards the monsoon broke in earnest, and after that we had no more difficulty, as our reservoirs were always overflowing! True to his promise, the Gam returned next day (May 30) with ten coolies, bringing up the remaining loads, so now we were in a position to stay here six weeks. Before going down, the coolies built us an open hut, roofed with bark, where we could have a fire, dry our clothes, and eat our meals in moderate warmth and comfort, without filling our tents up; and here we lived by day, except when the wind blew the rain and mist right through the *basha*, or the fire smoked too badly, or the roof leaked everywhere, or we could not keep the fire in at all. For better or worse, we were now committed to the Delei valley, and to a small portion of one mountain; so we had to make the best of it. *F. Kingdon Ward.*

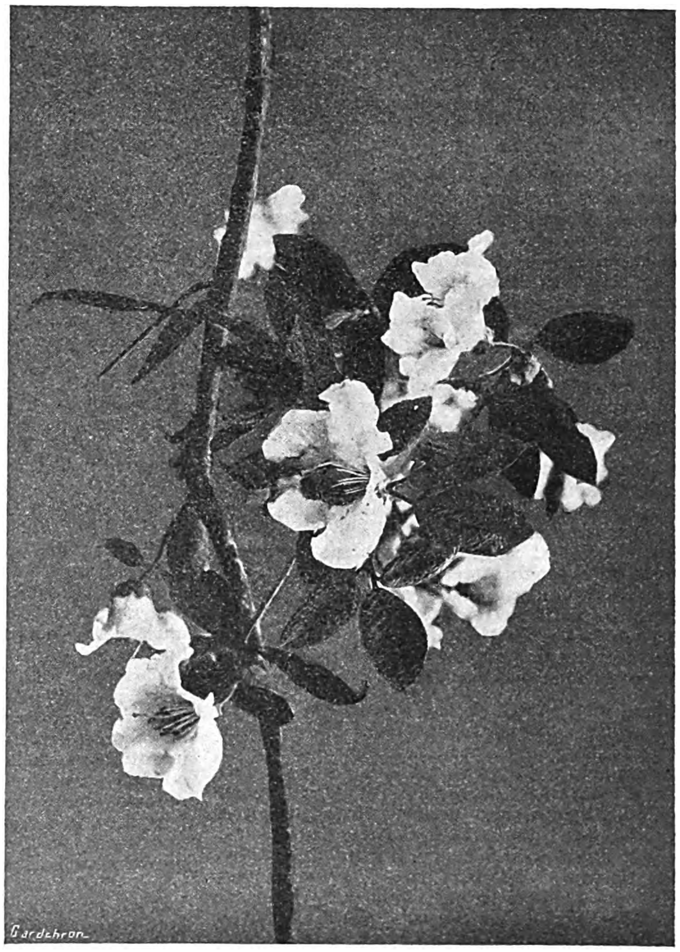

FIG. 228.—RHODODENDRON SP. § EDGWORTHII (K.W. 8,206.)

CHILE AND THE ANDES.*

No. XII.

It was a day or two before we all moved out to the farm. Meanwhile a Dutch steamer came into the harbour with a cargo of pedigree

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* Previous articles on Mr. Clarence Elliott's expedition were published in our issues of November 12 and 26, December 10 and 24, Vol. LXXXII; January 7 and 28, Vol. LXXXIII; July 28, Vol. LXXXIV; March 28, April 6 and 20, and May 11, Vol. LXXXV.

Freesian cattle, bound for the agricultural show at Santiago. The "King" went on board and bought to the extent of £1,000—two cows, two heifers, and about a ton of pedigree bull. They were brought off in a lighter, and hoisted on a rather inadequate crane. The bull was tied up in a ramshackle shed which he at once demolished, and just as he seemed to be getting into form, and was looking round as though to destroy Coquimbo itself, the "King" took charge, and with an amazing display of quiet nerve, got the bull to a great baulk of timber, and had him securely fastened before he knew what was happening. A very good show, which we watched from a carefully chosen strategic point. The "King's" views on imported cattle in relation to foot and mouth disease were interesting. He told me that Chilian farmers prefer Dutch to English cattle, because, owing to our policy of killing, to stamp out the disease, our cattle have acquired no sort of immunity, inherited or otherwise. They are particularly prone to take the disease, and have it in a severe form when they come into Chile, where foot and mouth disease is rife. Continental cattle, on the other hand, enjoy, he told me, a certain immunity, and take it less readily and less violently. Imported British cattle are disabled, often permanently, and always for a very long time, while imported Continental cattle, as a rule soon get over it. The enterprise of the Dutch breeder who had sent out this consignment, of his cattle was impressive. So far as I remember, there were between forty and fifty beasts. They were splendidly housed on board, arrived in wonderful condition, and were fetching excellent prices when I saw them later at the Santiago Show. The owner had sent out an attractive booklet with photographs of the animals and with their records and pedigrees printed in Spanish.

But to get back to plants.

In a deep gorge near the town, we found Alströmeria violacea ? (C.E.74), an extremely handsome species growing three feet tall, with wide, ample heads of very large flowers of a beautiful rose-lilac. The two upper segments were golden, flecked with crimson. The gold against lilac is, perhaps, a lapse from perfect taste, or a not very happy experiment. Who can say. Yet I was very pleased when I found, one afternoon, a clump of this striking species growing on a steep, sunny scree, with a sprinkling of last year's seeds lying about at its base. I settled down for an hour or more and picked up seeds one by one. I have heard now and then gentle murmurings that a fault of plant collectors is that they send home such miserably small packets of seeds of some of their finds. I would like to plant the murmurers on a rough scree, at a slithering angle, to scramble among loose stone and Cactus thorns, to pick up, one by one, last year's seeds of Alströmeria! There were Cactus thorns not only among stones I scrabbled in, but among stones I sat and kept slipping on!

Along the shore of the bay were several good things, especially a beautiful Malvaceous plant (C.E.81), and a dwarf, herbaceous Solanum, Solanum heteranthemum (C.E.82). The Mallow grew about two feet high, with wiry stems, grey, felty leaves, and mauve, Almond-scented blossoms, large, and of exquisite satin texture. I fear it is going to be very difficult in cultivation. Solanum heteranthemum grew about twelve to eighteen inches tall, with fragrant lilac flowers, and the general appearance of a dwarf, very floriferous and much improved Polemonium coeruleum with lilac flowers. Pasithea coerulea was superb on the hills about Coquimbo, growing five to six feet tall, with graceful, yard-long, branching spikes of brilliant blue. We collected plenty of seeds, which, with me, have germinated badly, although elsewhere they have done well. In Mr. Spedan Lewis's garden, plants from my seeds have already flowered and made their appearance at the R.H.S. Hall. Pasithea is not, of course, new to cultivation. Mr. Bowles told me that for years he has grown and flowered it in a warm wall-sheltered border in the open, and in late autumn Mr. A. G. Hadden sent me seeds from plants in the open in his garden at Porlock. The plant, however, is rare and very little known. Except in very favoured districts, I believe the best results would be obtained by planting it out in a border in an unheated greenhouse.

On the same hills, with Pasithea, we found seedling plants of Tecophilaea violaeflora, far more lusty and vigorous than any we had seen further south. They were six and nine inches tall, and carried four and five capsules on a stem. A most attractive plant was C.E.68—Bahia ambrosioides. It grew in rocky places on the hillsides, with the erect, sub-shrubby habit of the common Rue, in fact, it looked like a singularly beautiful Rue with creamy-white flowers. Two good finds which my companion made in the Coquimbo hills were Tropaeolum brachyceras, a charming, frail climber with short-spurred golden flowers, and Calceolaria picta, a graceful herbaceous species, eighteen inches tall, with a loose shower of rose-pink flowers spotted with crimson. Both were very scarce, and we failed to secure seeds of either.

A curious and interesting shrub at Coquimbo was Porlieria hygrometrica. It grows six to ten feet tall, very rigid and erect, with stiff pinnate leaves of a jade green. Reicher, in his *Flora of Chile*, states that it has been almost exterminated for the sake of its timber, but it was still very abundant in the hills at Coquimbo. Willis in his invaluable *Flowering Plants and Ferns*, states that "the leaflets spread out horizontally at night, but in the day fold up in pairs, reducing transpiration." We took special note of this, but found that exactly the reverse was the case! *Clarence Elliott.*

PROBLEMS OF PLANT LIFE.*

(*Continued from p.* 280).

II.—The Mystery of the Cell.

Everyone is aware in these days that plants of every shape, size and form, from the tiny Duckweed to the giant Water-Lily, or the dwarf Willow to the mighty Oak tree, are made up of cells. We are, indeed, so familiar with this commonplace of botany that we wonder there ever could have been a mystery of the cell. Yet so it is. The story of cytology, as this branch is called, is in point of fact a very wonderful one. The cell may be called, and in truth has more than once been spoken of, as the unit of life; for animal tissues as well as those of the plant are simply an agglomeration of cells, Whether we take the pollen grain or the petal. the leaf or stem, the root or fruit of a plant, every part is built up of cells, just as is the muscle and nerve, cartilage and bone of the human body. All this is the revelation of the microscope, and before that wonderful instrument was invented, the knowledge of the cell was of the most rudimentary character. When, however, the minute forms of life which are found in water came to be magnified, men began to form a totally new idea of the way in which plant and animal organisms were built up. It took a long time, it is true, for the theories to be tested, and facts to be demonstrated. Transparent growths, such as Algae, for example, could easily be studied, and their structure understood, but when it came to thick leaves, dense tissues, and solid wood, the case was different. Step by step, however, the biologist pressed on his way, removing as he went all the obstacles which beset his path, making thin sections, clearing and staining, until at last the truth stood revealed, and the incontrovertible verdict could be pronounced that all life was built up of, or consisted in modifications of, the cell.

Cytology, then, is that branch of botany which concerns itself with cell-structure, and a very wonderful subject it is. Looking at one of the unicellular organisms, such as Euglena, for example, with which every microscopist is familiar, it would seem to be an easy thing to define a cell. It appears to be a cyst, with a gelatinous material for the outer covering, and a content of a more or less fluid substance, which may be colourless or otherwise. But what appears so simple at first sight soon proves itself to be a very complex thing, and when we pass from the unicellular organism to one which is composed of a multitude of cells, one pressing upon the other, and each serving a different end, the task of defining the cell becomes one of great difficulty. Theories were formed, revised, discarded, and again introduced as new facts came to light, and means of investigation were perfected, and a vast army of workers have added their individual grains of knowledge to the building up of a science which to-day fills us with wonder.

One may, perhaps, take the researches of Malpighi, dating from the middle of the seventeenth century, as laying the foundations of their great superstructure. A good summary, not only of Malpighi's discoveries but of the history of cytology, may be found in *The History of Biology*, by Nordenskiöld, which has recently been published by Messrs. Kegan Paul, but this is a work which it is not possible for everyone to obtain.

Among English botanists who were able to render great service in the early days of modern biology may be mentioned Robert Brown, whose discovery of the nucleus may be regarded as epoch-making. The nucleus may be termed the soul of the cell, unless, indeed, we reserve that description for the nucleolus, which is the inner sanctum, the very holy of holies of the plant or animal tissue.

Another name which stands in the forefront is that of Schleiden, who was born in 1804, and in 1838 put forth the question, "How does the cell arise?" He was able to carry forward the work of Brown, and to him we owe the discovery of the nucleolus. So minute is this body that it was impossible to anticipate its discovery until microscopic technique had been brought to a high state of perfection. As Schleiden built upon the foundation laid by Brown, so Schwann built on the superstructure of Schleiden, and affirmed that one common principle of evolution is laid down for the most highly differentiated parts of animal and vegetable organisms, and that this principle of evolution is the formation of the cell.

Schwann held some views which did not commend themselves to later students, but upon his main thesis these workers have been able to formulate a conception of the phenomena of life as a whole, and it has been stated that without Schwann, Darwinism could hardly have been victorious. Mohl's researches resulted in a fuller and truer idea of the cell-nucleus than that held by his distinguished predecessors, and at the same time Nägeli, working on the structure of pollen grains in flowering plants, was able to give a very exact account of the division of the nucleus. He also discovered what he called the transitory cytoblasts, which have since received so large a share of attention as chromosomes, although it remained for others to follow out their full course of development and give them their true interpretation.

When we come to Darwin, we find the theory of the cell receiving a new interpretation. He believed that every cell gives off minute atoms or germinules which, being reunited to form sexual germs, give rise to the resemblances which exist between parent and offspring. This theory, known as pangenesis, has not received support in more recent years, but a further paper on Mendelism and heredity will be necessary to enable us to deal with that branch of the subject. It is curious to note that Haeckel, with all his aggressiveness, held a view respecting the structure of the cell which was at variance with fact—the view, namely, that certain single-celled organisms, which he called monera, were destitute of a nucleus. This suffices to show how difficult a subject for research the cell has been. Microscopists will appreciate what a vast improvement in methods of study was brought about by the invention of the microtome. Under the old methods it was Schultze, perhaps, who brought the study of cytology to the highest degree of perfection. Along with him may be mentioned Strasburger, whose *Practical Botany*, edited by Professor Hillhouse, of Birmingham University, was for many years an invaluable text book for English students.

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* The first paper of this series appeared in our issue of April 13, p. 280.

In our next paper, in which we will give a glance at the subject of plant fertilisation, we shall be able to derive help from the foregoing notes, while they will serve as a starting point for some further investigations. *Hilderic Friend.*

NOTICE OF BOOK.

Hair-Dyes and Agriculture.

A book on hair-dyes and hair-dyeing is not only a novelty, but the book by Mr. H. S. Redgrove, a chemist and botanist whose name is known to readers of *The Gardeners' Chronicle*, and Mr. G. A. Foan, a practical hairdresser, is very welcome; for, in spite of the fact that hair-dyes are now used by an ever-increasing number of devotees of beauty and fashion, no book dealing with the subject in a scientific manner has hitherto been produced, at any rate, in English. Moreover, the book in question,* in addition to very full information concerning the composition of the various preparations used for dyeing the hair and the best methods of applying them, also deals in a most interesting and helpful manner with the structure of the hair, and with various questions relating to its hygiene, many practical hints being given on how to avoid premature greyness.

From hair-dyes to agriculture is not so far a cry as might appear at first sight. In spite of many researches which have been carried out to discover suitable substances for colouring the hair among the synthetic coal-tar dyes, and which are detailed in the book, certain of the older dyes obtained from plants remain the safest and best. This is especially the case with Henna, which is, however, often mixed with deleterious substances. Henna (Lawsonia alba) is extensively cultivated in Tripoli, India and Egypt to meet the big demand for the dye for cosmetic purposes, and the authors deal very fully with the botany and cultivation of the plant. Among the numerous illustrations, two of Henna are included, one showing a Henna plantation, the other the plant in bloom.

The two Chamomiles used in hair-dyeing, Anthemis nobilis and Matricaria Chamomilla are also carefully described and figured. Other dyes of plant origin dealt with include Indigo, Logwood, Fustic, Catechu and Quercitron, the chemistry of the various substances and their action on the hair being most lucidly explained. Many formulae for hair-dyes are given, including some especially adapted for dyeing false hair or postiche, for which purpose the vegetable dyes are particularly useful. The whole constitutes a volume as interesting to the general reader as it is, we should imagine, indispensable to the professional hairdresser. It should make a special appeal to those readers interested in the question of the chemistry of plant products. The book contains a very complete index and a useful bibliography.

FUEL AND HEATING.

The following remarks on fuel and heating are inspired by some well-reasoned notes in recent issues of *The Gardeners' Chronicle* on the production of crops in unheated greenhouses. Some of your correspondents have shown how useful glasshouses may be without artificial heat, but, however this may be, most growers will admit that their full economic value can only be utilised when reasonable heating is practised. Bearing in mind that the price of fuel is both actually and relatively higher than in pre-war times, it becomes more and more important that it should be purchased and used intelligently and economically. It would appear that the average gardener pays little attention to this matter and the waste accruing from this neglect must be very considerable.

The old adage that the cheapest article in the market is the dearest in the long run is often exemplified in the purchase of fuel. The value of fuel depends not on its weight, but mainly on the number of British thermal units (B.T.U.) it is capable of producing, and therefore price per ton is not the sole consideration. As most of the greenhouse heating in this country is by the use of coke as fuel it may be worth while to consider the production and relative values and uses of the various specimens which answer to this name in the market.

Coke resembles some other articles of commerce in that it lacks uniformity, but for horticultural purposes there are two main classifications—(1) furnace coke, (2) ordinary gas coke, both of which may vary considerably in heating power within their own groups. Generally speaking, however, gas coke is more uniform in heating power than furnace coke, as an average sample will yield at least from 12,000 to 12,500 B.T.U.'s per ton, whereas the yield from furnace coke varies between 10,000 and 13,000 B.T.U.'s per ton, the latter figure being very exceptional. It has to be remembered that the builders of so-called coke ovens have in mind the separation of sulphate of ammonia, tars, dyes, etc., as primary products, leaving coke as a residue, whereas in the case of the gas house, gas is the primary product, and although coke is again a residue, to a certain extent there is not the same temptation to extract the volatile oils to their utmost capacity as in the case of furnace coke. This directly affects the value of the coke for greenhouse heating.

The superiority of gas coke over raw coal for greenhouse boilers is incontestable, as gas coke contains no smoke-producing matter and requires less than half the amount of cold air necessary for raw coal for its complete combustion.

The art of successful stoking is to burn the fuel completely with as little air as practicable. Every pound of cold air in excess of that actually required tends seriously to cool the furnace, just as cold-feed water tends to cool the boiler. In theory, 1 lb. of coal requires 12 lbs. of air for its complete combustion, but in ordinary practice so much as 30 lbs. of air is frequently allowed in order to prevent emission of smoke. Heat absorbed in raising this excess air to the temperature of the chimney flue gases is wasted so far as the temperature in the greenhouse is concerned. It is obvious that under the low pressure principle of greenhouse boilers it is much easier to approach the ideal of complete combustion with coke than with coal as fuel, but the superiority of gas coke over furnace coke is not so generally appreciated. The latter is a harsh coke, not at all suitable for greenhouse boilers, and even when its B.T.U. content is equal to that of gas coke its efficiency is much lower because of the necessity of allowing an excessive amount of air to induce complete combustion.

Many gardeners who know these facts are not able to give their employers the benefit of the knowledge, but have to remain impotently in the background while the secretary, the agent or the housekeeper buys fuel judged solely on its paper price per ton, and with no regard to its real heating value or its suitability for the type of boiler concerned. *W. Auton.*

MARKET FRUIT GARDEN.

Although the rainfall of May (1·92 inch) was just above the average, it was the driest May we have had for four years. Most of the rain fell on the 5th, and towards the end of the month the land had become very dry, mainly as a result of several days of strong easterly winds. Although the weather was often cool, there was much sunshine. The Apple blossom, which began to open on the 10th, and was general on the 19th, encountered the best of the weather. Bees were very active and numerous, and conditions were altogether most suitable for pollenation. As a result, the bloom appears to be setting very freely, and there can be little doubt that a bountiful crop will be gathered. Nearly all varieties bloomed very profusely, some of them really too much. Three outstanding varieties are Worcester Pearmain, Bramley's Seedling and Lane's Prince Albert. Cox's Orange Pippin was very light on blocks of trees which have given me two heavy crops; but one lot which yielded less last year had plenty of bloom. Blenheim Pippin is also short with me, except for one row which failed last season. Beauty of Bath looks very promising, as do James Grieve, Early Victoria, Lord Grosvenor, Lord Derby, Newton Wonder, Allington Pippin, and Royal Jubilee. I do not know when I have seen so much bloom on Warner's King.

Plums evidently suffered more from frost than appeared at the time. In one plantation Victoria was practically wiped out and the bloom of Belle de Louvain severely thinned. In another plantation both escaped. Other varieties have reached the stage where a few of the fruitlets are swelling, but others lagging behind. The chances are that the latter are not going to hang, in which case the crop of Plums will be light. The most promising variety is Czar, which will almost certainly carry a full crop. Bush fruits all look exceedingly well, except in some low-lying spots where the bloom of Black Currants was caught by frost. Pears and dessert Cherries are not setting well, but these are of no commercial importance to me. Apples and Black Currants are my main crops, and should give me a good season.

Pests and Diseases.

Insect and fungus troubles are well under control so far. Winter moth and tortrix caterpillars were rather numerous on young trees, but have been killed by arsenate of lead. Plums and Black Currants in the immediate district are badly crippled by aphis; but in my plantations tar distillate wash has given a complete control. There are signs that the Currant capsid (Lygus pabulinus) is going to develop rather seriously; and this is really the only trouble in the way of insect pests. Apple-blossom weevil this year did a certain amount of unusual injury to the young leaves before the bloom opened, and has capped the usual percentage of blossom, a matter of no importance in a year when bloom is so plentiful. Apple scab I have not seen yet on any of my trees, with the exception of a Siberian Crab in my garden, which is always my scab barometer. As the first of the post-blooming sprays for scab prevention has been applied, there should now be no serious trouble from this disease. The weather when some of this spraying was done was such as to favour injury from lime-sulphur. Fortunately, very little occurred. There was a certain amount of leaf-drop in one batch of Cox's Orange Pippin from the use of lime-sulphur at only one part in a hundred, the strength which I was using for all varieties; so I diluted still further, to one part in 150, for other blocks of this variety, giving a good wetting instead of making any attempt at mere dewing over. This has done no harm at all, but may not be strong enough to do any good.

Response to Manuring.

Trees in my older grass orchards, both Apples and Plums, which have been treated under the "sod mulch" system for some years—the grass mown twice a year and allowed to rot into the ground—are showing a response to manuring which is quite spectacular. This is particularly pleasing to me, as I had nearly given up hope of reviving some of my trees without breaking up the turf. Last year, over a considerable area, they looked very poor indeed, showing marked symptoms of nitrogen starvation—small, light-coloured leaves, little growth, bark of a light colour, and a tendency to die back. This was in spite of a complete dressing of chemical fertilisers, including 3 cwts. per acre of nitrate of soda. This nitrate, which used to give me good results, appeared to be failing to act on the trees, even where the dressing was increased to 5 lb. per tree. Indeed, the effect hardly showed even on the grass.

Almost a chance experiment seems to have

Blonde or Brunette? A Complete Account of the Theory and Practice of Hair-Dyeing in all its Branches, by H. Stanley Redgrove, B.Sc., A.I.C., and Gilbert A. Foan. 8½ ins. × 5½ ins., pp. xii + 132 + 3 plates. London: William Heinemann (Medical Books), Ltd., 99, Great Russell Street, W.C. 1. Price 7/6 net.

given me a solution of the problem. I had some lime left over from spraying, and this was applied to the ground under some of the worst trees. Towards the end of the season I began to see some very slight improvement in these trees. The leaves were remaining green after those on the unlimed area had begun prematurely to take on autumn tints. An analysis of the leaves made at Long Ashton Research Station showed that those from the limed plot contained rather more nitrogen than the others. In some way the trees on the limed plot had been able to utilise some of the nitrogenous manure.

Now my soil is not short of lime, heavy applications of ground chalk having been made in previous years. I had tested the soil in all the plantations and found it neutral; and an analysis, also made at Long Ashton, confirmed this. Therefore the lime, if having any influence at all, must be working on the surface. As a matter of fact, it could not do anything else so soon after application on grass land, as the soil was very dry all the summer. It could only be supposed that it was working in some way on the mat of dead material which had accumulated as a result of the annual mowing of the grass. Apparently this mat was holding up the nitrogenous manure so that the trees could not get it; and the lime encouraged bacterial activity, resulting in the breakdown of the mat and the release of nitrates.

The same process occurs in the making of synthetic "farmyard manure" (as in the Adco process). All litter, such as cut grass or straw, is naturally covered with bacteria, which are waiting for conditions suitable for breaking it down. They can do this only in the presence of moisture, nitrogen, and some substance capable of neutralising acidity. In making "farmyard manure" from straw, sulphate of ammonia and ground chalk have been used successfully. Presumably, on the cut material in my plantations, the bacteria were present and the nitrogen had been supplied, but the bacteria could not get to work because of the absence of some neutralising agent. Where this was provided in the form of lime, bacterial action started and some of the nitrogen was made available to the trees.

Practical Application.

The theory seemed good enough to act upon. The possibility of making synthetic "farmyard manure" of the accumulated litter as it lay on the ground was attractive. Obviously, I must apply plenty of nitrogen and just a little lime or chalk to neutralise acidity. Calcium cyanamide and nitro-chalk immediately suggested themselves as suitable manures to provide both requirements. When synthetic manure is made in heaps, large quantities of water have to be used to saturate the litter. This being impossible on the ground in the plantations, rain must be depended upon. Therefore, I wanted some lime-nitrogen dressing of not too soluble nature which could be applied in autumn or early winter, when there would normally be plenty of rain following. I elected to use calcium cyanamide, and applied 3 cwts. per acre in December. As things turned out, my object was defeated by the weather, so little rain falling during the winter that the cyanamide remained dusty on the surface for weeks. I doubt, however, whether the idea of early application was sound, as the temperature would presumably be too low for bacterial activity until spring. It was later suggested to me that 3 cwts. of a rather slow-acting fertiliser like calcium cyanamide was rather light for trees in such poor condition on grass, so I added a dressing of 3 cwts. of nitro-chalk, applied in February, over the greater part of the area, making 6 cwts. of nitrogenous fertiliser per acre altogether. I can say at once, however, that parts of the plantations received the 3 cwts. of nitro-chalk only, and the result is just as marked at present as where the previous dressing of cyanamide was given; so I think the need for very early application can be ruled out. In future I should prefer to use nitro-chalk only, as the cyanamide burned the men who applied it, and probably the grass as well. Phosphates and potash were given in addition over the whole area.

The Result.

The effect of the manures showed from the beginning of the growing season. I have not had such foliage for years, if ever before. The leaves are big and of beautiful dark green colour. Old Plums, which seemed to be nearly worn out, appear likely to refurnish themselves with growth and take on a new lease of life, as they are pushing out new shoots from dormant buds along the main branches and stems. The grass, which was scorched brown by the combination of winter drought, frost, tar-distillate wash, and possibly cyanamide, was very late in making a start, but is now growing vigorously and showing the dark green colour which is expected to follow nitrogenous manuring. Both trees and grass on a plot which received phosphates and potash, but no nitrogenous manures, are in marked contrast to the rest of the area. Part of this plot was limed, to see whether lime without notrogen would answer, but so far this is giving a negative result. A plot from which potash has been omitted for two years is not yet giving definite results, except on the grass under the trees; but there may be a different story here as the season goes on. It is, however, rather soon to expect a response to the use of potash. Often this does not show until after the third or fourth application. Although my soil is very low in available potash, the need for it was not likely to be acute while the trees were in a definitely low nitrogen condition.

I have dealt with this matter at some length, because it may be of some use to growers who have trees in grass which are not responding to manures. In case some of my readers consider that I have written a lot of semi-scientific twaddle, I will sum up the situation in a very few words, as follows: In my conditions, fruit trees grown under the "sod mulch" system do not respond to nitrogenous fertilisers without the presence of a little lime. The new nitrogenous fertilisers with a lime base, such as nitro-chalk, therefore have a special value. On other soils, for all I know, the need for lime-nitrogen manures may not occur. A good response to nitrate of soda or sulphate of ammonia has often been reported. There may be something peculiar in my conditions, or it may be that, after years of sod mulch treatment on any soil, the accumulation of litter limits the effect of nitrogenous fertilisers which do not include lime. I ought to have found my solution sooner, because my records show that, in one season when I had a particularly good result from nitrate of soda, a dressing of ground chalk had been applied a few weeks before. *Market Grower.*

FRUIT GARDEN.

STRAWING STRAWBERRIES.

It is essential that Strawberries should be marketed in clean condition, otherwise they are quite worthless. The method of strawing which is usually adopted for this purpose is the most satisfactory, but the work must be done at the right time to give the best results.

It is a matter of importance that the work should be carried out sufficiently late in the season for the final hoeing to keep the plants reasonably clean until after the crop has been harvested. At the same time, it is advisable to place the straw in position before the fruit has grown to such a size and reached such weight that it is laying on the ground.

Once the fruit has lain on soil for any length of time, especially during wet weather, it will never become thoroughly clean again. It will lose, to some extent, its fresh appearance when ripe, with the result that its market value will be reduced. There is also a good deal more labour needed in placing the straw in position once the fruit is on the ground. Each bunch of fruits must be carefully lifted and the straw placed beneath it, and even then some injury will be done to the crop.

There is some difference of opinion among growers as to the best straw to use for Strawberries, whether this should be baled or loose. Baled straw has the advantage of being very easily moved from place to place; but it takes a good deal of pulling to pieces. Straw from the stack is easy to handle once it is in position on the field, but it is very bulky to move from place to place.

If Strawberries are grown beneath half-standard trees, there is not the slightest doubt that baled straw has the advantage. It is difficult to get a load of unbaled straw down the rows.

In the cost of baled straw and unbaled straw there is a difference per ton. The baled straw costs a good deal more than the other, but when the difference in carting and in the labour of getting the straw out is taken into consideration, the difference in the cost is not great.

Whether loose or baled straw is used it should be clean, that is, free from weeds; nothing more quickly gets a Strawberry plantation overrun with weeds than the use of straw which is full of weeds, the seeds of which will be sown on the ground, causing endless work with the hoes as they germinate and grow in their new positions.

The work of strawing should be carried out with the greatest care. The straw should be properly drawn our or "yelmed," as it is called, as if it were to be used for thatching.

Particular attention is needed when placing the straw in position, as unless care is exercised in this direction, a good deal of the fruit instead of resting on the straw will be covered by it. This very often happens with those who have had little experience of the work.

Another matter of importance is the amount of straw which is put down. It is just as easy to put the straw down too thickly as too thinly. There should be just sufficient placed between the rows to cover the ground well, but no more.

A plan which is practised by some growers is to place straw along each side of the Strawberry rows, but to leave the middle of the ground between the rows free from straw. This is false economy, as should there come a single heavy shower of rain during the picking season, the soil from the middle of the row will be splashed about in considerable quantity, and a good deal will get on to the ripe fruit and ruin it for market. *J. W. Morton.*

VEGETABLE GARDEN.

CELERY.

The young Celery plants intended for the main crop should now be planted out in well-prepared trenches in which a liberal supply of well-rotted farmyard manure has been incorporated. If the seedlings were pricked out in cold frames, they should now be strong and sturdy and hardened off ready for transference to the open.

Trenches one foot wide will suffice for single rows, and one foot nine inches for double rows, About a week before planting give the surface a dusting of old soot, and fork it in lightly, and also before planting tread the soil lightly and rake it level if the ground is not too wet. Place the plants about a foot apart and, if in double rows, plant alternately, as this system will give the individual plants more room. When each row is finished, give a thorough soaking of water, preferably that which has been exposed to the sun and air. If the weather proves hot and dry water should be given almost every day, as Celery is a moisture-loving subject and will never grow well if allowed to become dry at the roots. Frequent dampings overhead in the late afternoon with a rosed can will also be found very beneficial, and if the weather is dull and showery, take advantage of this to give a dusting of soot. This not only helps to prevent attacks by the Celery fly, but also acts as an efficient fertiliser. Where supplies of liquid manure can be obtained, this should be diluted with water and the plants given frequent soakings, taking care not to pour it into the hearts.

During the summer it is a good plan to mulch the surface of the trenches with half-decayed stable manure; the frequent waterings will wash the nutrients from this manure down to the roots, while the mulch will also keep the soil in the trenches moist, and thus ensure free growth.

Towards the beginning of September the plants should be ready for the first earthing up. The grower should go along each row and carefully remove all the side-growths and decayed foliage, and then tie up each plant with a piece of broad Raffia. As each row is finished, give it a final thorough soaking with water, taking care to keep the plants themselves as dry as possible. Before any soil is placed around them they should be well dusted with old soot to ward off attacks of slugs during the winter. The trenches should have been cut out four feet apart, and, if this was done, there should be plenty of soil in the ridges between each trench for earthing up. Mark a trench out two feet wide down the centre of each ridge, pushing the spade well down each side, and the soil taken from the first spit on each ridge will be sufficient for a first earthing, which should not be more than a third of the way up the Celery plants, otherwise some of the soil may get into the hearts and cause them to either rot or become deformed. There will then be a narrow ridge of firm soil each side of the row, about a foot wide, and this, of course, will support the soil when the Celery is earthed up for the second and third time.

The ties should be loosened as the earthing up proceeds. Too much soil placed around the plants at one time is injurious; it is much better to complete the work in three operations, and the soil, after the last earthing up, should be placed well up to the foliage, and sloped outwards so much as possible to shoot off heavy rain. The sides of the banks should be made firm with the spade, thus giving them a tidy appearance and also warding off superfluous moisture. Give a good dusting of soot when earthing up is completed, and if the effects of Celery fly should appear, pick off the affected foliage.

If very wet weather should prevail in the late autumn some means should be taken to prevent too much water running down into the hearts of the plants. Some growers place sheets of galvanised iron along the rows. A good covering of clean straw placed along thickly in the form of a ridge will also assist in this respect, and this will serve to protect the crop in severe weather. Of course, in mild, dry weather, the coverings should be removed so that the air may circulate about the plants, otherwise there will be great danger of them rotting off.

The above remarks apply to Celery for ordinary use, but to obtain exhibition plants there is no better method of blanching than by using narrow bands of stout, brown paper. Exhibition plants should be put out in shallow trenches of well-enriched soil, and kept well watered and syringed. Keep all side growths picked off and mulch the surface with some well-decayed manure, as advised for the ordinary crop. Celery takes about six weeks to blanch well, and about this length of time before it is wanted for exhibition some bands of brown paper about six inches wide should be placed around the bases of the "sticks," tying them with broad Raffia. Continue to place the bands of paper up the sticks as they grow, examining the plants each time for side growths and twisted sticks, which should be removed; the final bands should be in position two or three weeks before the crop is wanted, thus ensuring an even blanch right up to the foliage. Some broad Raffia should be tied loosely around the foliage, to prevent the wind breaking it. Grown thus, it is an easy matter to apply water and stimulants and the plants should be well sprayed on all bright afternoons. When wanted for exhibition, they should be carefully lifted with a spade and the roots trimmed off, after which they should be sponged several times with clean, soft water, until they are quite clean. Celery is very brittle, therefore keep the tops tied up during transit to prevent them breaking. Each head, when dry, should be wrapped in clean, white paper, and when staged, should be syringed to keep it fresh throughout the show. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

HOME CORRESPONDENCE.

The Destructive Ivy.—As opposed to Sir Martin Conway's indictment of Ivy on old castles which you appear to endorse (p. 355), the views of the late Colonel Morgan, an archaeologist well-known in south Wales, may be of interest. The conversation arose over his failure to induce Ivy to grow over an ugly patch of concrete supporting the lower decaying portion of wall of that part of Pennard Castle (in the Gower Peninsula) which remains in a fair state of preservation. He was indifferent to the presence, or absence, of Ivy on old buildings, and expressed the view that, were it not for the Ivy on the walls of Oystermouth Castle, Mumbles (recently taken over by the Swansea Parks Department), many of those walls would have collapsed long ago. His view was that the stems of the Ivy often bound loose stones and masonry together, and that, where the Ivy was killed, collapse soon followed. However, from the botanist's point of view it was fortunate that it refused to grow at Pennard, as it is on those walls that Draba aizoides is to be found (not Penrice, as stated in Bentham and Hooker's *Flora*), so Hedera Helix was very considerate for once. *Cecil E Marks, Educational Garden, Singleton Park, Swansea.*

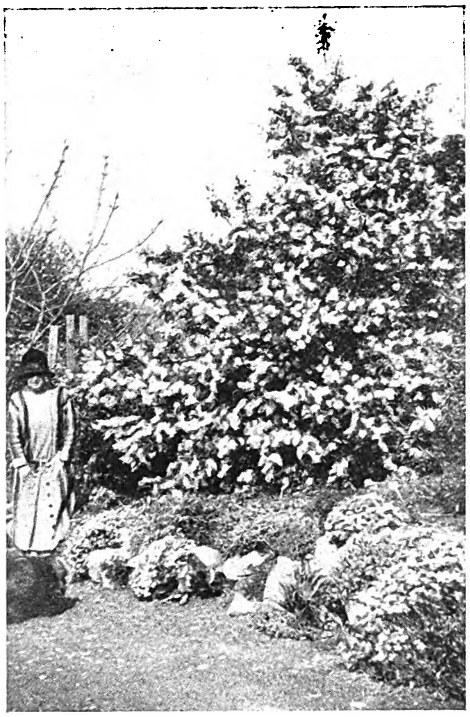

FIG. 229.—EXOCHORDA GRANDIFLORA AT KITTOES, BISHOP'S TEIGNTON.

Exochorda grandiflora.—In case it may interest your readers, I enclose a photograph (Fig. 229) of Exochorda grandiflora growing in south Devon. The plant has been in position for four years, and was about two feet high when planted. It has been a glorious sight. *Harry Geo. Younger, Kittoes, Bishop's Teignton, South Devon.*

The Iris Society's Show.—It was generally admitted that the Iris Show was a great success. It was run on somewhat novel lines, as the Executive Committee in March delegated to individual members of the Committee their particular functions and did not meet again until the day of the show. The plan worked admirably, and Mr. Pilkington, Mr. Barr, Major Churcher, and the other members of the Committee are to be congratulated. Most of all, however, I should like to mention Mr. Dillistone. Although in bad health—he had to go to a nursing home for a small operation on the evening of the first day of the show—his arrangements for housing the exhibits were perfect. The lay-out was very good, and it was achieved with the use of material placed at the disposal of the Iris Society by the R.H.S.; everyone will wish Mr. Dillistone a rapid recovery. The trade put up magnificent displays, all of which were in perfect taste; they allowed the flowers to speak for themselves, and I have never been to a show where the names of the firms exhibiting were less conspicuous; indeed, this proved somewhat of an embarrassment, as it was often difficult for visitors to find the display of a particular firm. The exhibition of pictures of Irises was a gratifying and instructive feature; the beautiful drawings made by the late Mr. Champion Jones for Miss Willmott were an object lesson, and Mr. Galsworthy's pictures of Irises actually deluded the public into thinking that they were living plants; while the rich colours by that grand old veteran, Mr. Caparne, gave a real sense of the decorative value of the plant. The competition for Irises arranged for decorative effect should be developed—two exhibits were exceedingly good. The stalls furnished by *The Gardeners' Chronicle*, *Amateur Gardening* and *Gardening Illustrated* were much appreciated. Mr. Bunyard's display of Iris diseases was of the greatest possible interest, and we all hope that he will find time to continue and develop the work and indicate the remedies for the diseases to which Irises are becoming increasingly susceptible. *William Lawrence, Burford.*

R.H.S. Examinations.—Mr. Alfred Hughes, with less than two years' experience as an apprentice in the Cheadle Royal Hospital Gardens under Mr. A. Falconer, has been placed first, Class 1, in the junior examination of the Royal Horticultural Society, which honour also carries with it the Society's Silver Medal, the highest award obtainable in this section. A former apprentice, Mr. Ross Young, was placed second in 1928, and this year has gained high honours in the Senior section. This record appears to be unique outside colleges and schools of horticulture, and speaks highly of the training these lads get in gardens which have become notable in the north of England. A former student of these gardens, Mr. T. H. Everett, also gained high honours in the Royal Horticultural Society's examination while employed under Mr. Falconer, and after a very successful period at the Royal Gardens, Kew, is now head gardener to a millionaire at Yonkers, New York, and is a frequent contributor to the pages of *The Gardeners' Chronicle.* Young men employed at the Cheadle Royal Hospital Gardens are able to gain experience in all branches of gardening, as shown by the excellent and varied exhibits shown from Cheadle at the leading horticultural exhibitions. *F. C.*

Rosa gigantea Flowering Out-of-doors.—When referring to the flowering of Rosa gigantea at Cambridge Botanic Gardens (see *Gard. Chron.*, Vol. LXXXV, p. 228), no mention was made of this species having been flowered outside in this country. A specimen here has been flowering since June 1. It is growing on a wall facing south and formed nine flower buds. Two years ago it developed six blooms. At Brent Eleigh Hall, Lavenham, Suffolk, a specimen flowered outside in an open border in 1912, and again profusely in 1915. In June, 1915, I sent foliage and a flower to the Editor of *The Gardeners' Chronicle.* Both sets of cuttings from which these plants were grown were sent to Mrs. Pearson, from Hoti Maidaan, India, by Colonel Campbell, an officer in the Corps of Guides. The colour of the flower is white when fully developed, although the bud has a lemon tint. A condition which encourages this Rose to bloom is partial starvation. It should be left unpruned. It will also be noticed that three of the years I have mentioned were preceded by a very hot summer, viz.: 1911, 1914 and 1928. Many gardeners who served in the Wessex Territorial Division in India, 1914-19, will have seen this species in bloom around the cooler hill stations. It is illustrated in *Gard. Chron.* of November 5, 1921, and a writer inquired if it had ever been tried out-of-door in the warmer parts of England. This Rose has withstood 25° of frost here with no other protection than the wall. *Charles Hodgson, Acton Place Gardens, Sudbury, Suffolk.*

SOCIETIES.

IRIS SOCIETY.

June 6 and 7.—This special flower Society filled the new Horticultural Hall, Westminster, with Irises of considerable beauty. In the centre of the hall there were many fascinating collections arranged by the chief trade growers, and these were a very attractive feature of the show. The classes for new seedling Irises contained a goodly number of really meritorious novelties, and the chief amateur classes were also responsible for many magnificent spikes of tall bearded Irises. The show was opened, well on time, by His Excellency the French Ambassador, after which there was a luncheon to distinguished guests. In the afternoon, the R.H.S., The English Speaking Union and the Iris Society entertained members of the Garden Club of America to tea. In the morning of the second day of the show, Mr. R. W. Wallace initiated a discussion on " Garden Irises," and, in the afternoon, Mr. Peter R. Barr lectured on " Iris Species for the Garden." There was a very good attendance ; nearly five thousand persons passed the turnstiles during the two days.

New Seedling Irises.

In the open sections there were twelve classes for new seedlings and, with one exception, they were for bearded Flag Irises of specified shades of colour. Certificates of Merit were awarded to the newer varieties, which showed a distinct advance in their respective classes, and certain selected varieties also received medal awards.

Certificates of Merit.

Yukon.—A stately spike of Mrs. H. Darwin type. The flowers were large and delicately flushed with very pale blue. Shown by Mr. G. L. Pilkington.

Jane Austin.—A tall spike of white flowers feathered with purple. There was less feathering on the falls than on the standards. Shown by Miss Insole.

Jurion.—A robust purple bicolor of Lord of June type. The standards were of slaty-blue colour and the falls were purple, lined with deeper colour. Shown by Mr. Frank Burton.

Trigo.—An exceptionally tall spike of very large flowers of Edward Michel type. The standards were of deep electric-blue colour, and the falls, which measured over four inches in length and three inches across, were of violet-purple colour, shading to blue. This handsome variety was also awarded a Silver Medal. Shown by Miss Insole.

Carfax.—In the same class as the foregoing variety the Silver-gilt Medal was awarded to a magnificent spike of exceptionally branching habit. The spike bore six fully open flowers and three buds. The standards were of electric red-purple colour and the falls were a deeper, velvety red-purple. Shown by Mr. A. J. Bliss.

Unnamed.—A tall spike of Alcazar type. The standards were of shot-purple colour and the falls were violet-crimson with deep veining. Shown by Mrs. Hamilton Rowans.

Unnamed.—A dwarfer spike of Eldorado type. The standards were yellow with a smoky centre and the falls were yellow, heavily veined with smoky-purple. This variety also received a Silver Medal. Shown by Mr. G. G. Whitelegg.

Joan Curtis.—This was probably the best garden variety among the new seedlings. It has a sturdy spike of flowers possessing exceptional substance (Fig. 219). The standards were of brilliant rich golden-yellow and the falls were reddish-maroon lined with yellow at the base. This variety also received a Silver Medal. Shown by Mr. Amos Perry.

Dog Rose.—A very tall spike of pallida type, with shining rosy-mauve flowers. Shown by Miss Insole.

Competitive Classes.

Many magnificent blooms, especially of bearded Irises, were to be seen in the competitive classes, and, generally, competition was keen. There were no finer blooms in the show than those exhibited by Mr. G. L. Pilkington, Liverpool, in the class confined to amateurs, for a group of bearded Flag Irises on an area of seventy-square feet, and with which he easily secured the first prize. It was a magnificent collection of extremely choice sorts, and included Bruno, in splendid condition ; Micheline Charraire, a grand white ; Souvenir de Letitia Michaud, lavender-blue ; Mary Gibson, pale smoky-plum, shaded gold ; Kenya, a good yellow, with pale cream falls ; Madame Cecile Bouscant, rich rose-lavender ; Louis Bel, small, rich velvety-purple ; Flaming Sword, Mrs. H. F. Bowles, Grey Lady, Nemoralia, a tall variety, with large, slaty-lavender blooms ; Coronago and Leonato. Mr. B. R. Long, Maidstone, was second, his best sorts being Mary Gibson, La Grand Ferré, Farrandale, Feronia, Amber, rich yellow ; Lady Charles Allom, deep purplish-blue, and Nemoralia ; while in his third prize exhibit, E. W. Meyerstein, Esq. (gr. Mr. Clapham), Morant's Court, Sevenoaks, included Lord of June, Catherine, Ann Page, Alcazar and Celestial in good condition.

In Class II, for a group on an area of thirty-six square feet, the Rev. Rollo Meyer, Watton Rectory, Herts., was first with a choice collection which included Dream, rose-coloured ; Balaruc, a good white of medium size ; Souvenir de Madame Gaudichau, flavescens, Kochii, and several good seedlings. Mr. G. P. Baker had grand vases of Sikh, smoky-plum-purple with velvety falls ; Moonlight, slaty-white ; Encorceleur, Alcazar, Clewen, and King Karl, with crinkled, apricot-tinted, biscuit-coloured standards and purple-spotted falls, in his exhibit, which was awarded the second prize ; while the best blooms in the third prize group, exhibited by Sir William Lawrence, Bart., Burford, Dorking, were of Titus, Diana, Lent. A. Williamson, Nemoralia, Opera and Aphrodite.

Mr. G. L. Pilkington was first with grand blooms in the class for a group of bearded Flag Irises on an area of twenty-four square feet, his best vases being of Lord of June, Quaker Lady, Africa and Mercedes. Mr. J. Sutcliffe Pyman, Sutton Scotney, was second, showing excellent examples of Medrano, Chasseur, Quaker Lady, Monsignor and Flaming Sword, while, in his third prize exhibit, the Rev. Rollo Meyer's best blooms were chiefly of unnamed seedlings.

Sir William Lawrence, Bart., was first in Class IV, for eighteen spikes of bearded Flag Irises, not fewer than nine varieties, his collection containing grand blooms of Ballerine, silvery-lavender standards and purplish-blue falls ; Allies, smoky-plum standards, with darker, velvety falls shaded brown at the base ; Glamour, Afterglow, with pale, slaty-lavender standards and slightly darker falls ; Lord of June and Blanche de Cashmère. Outstanding sorts in the second prize exhibit by Lady Elphinstone, Carberry Tower, Midlothian, were Albert Victor, violet-blue ; Opera, Thuban, large, lavender standards and purplish-blue falls ; Susan Bliss and Iris King. Third, Mr. J. Sutcliffe Pyman, who included good quality blooms of Medrano, Flaming Sword, Princess Beatrice and Monsignor.

For twelve spikes of bearded Irises, not fewer than six varieties, the Rev. Rollo Meyer was first, with Bruno, Amber, Duke of Bedford, Micheline Cherraire, Lord Lambourne, G. Parthuis and Leonata ; second, Mr. J. Sutcliffe Pyman, who showed very good blooms of Medrano, Flaming Sword, Ma Cherie and Ambassadeur.

Mrs. E. M. Garnett, Londonderry, led for six spikes, not fewer than three varieties, with grand examples of Grace Sturtevant, Gabriel Melchior and Mrs. Valerie West ; second, Rev. Rollo Meyer, with Amber, Duke of Bedford, Oriflamme and Crusader, very fine ; while Mrs. Garnett was also first for three spikes of any one variety, with Mrs. Valerie West ; second, Mr. J. Sutcliffe Pyman, who showed Princess Osra, a lovely sort, white, shaded and dotted lavender, especially on the margins.

In Class VIII, for three spikes of each of three different Irises, other than bearded sorts, Mr. M. G. Fitzhugh, Ashford, Kent, was first, and Miss L. Pesel, Twyford, second, the latter exhibitor being first in the next class, for six spikes of bearded Irises, not fewer than three varieties, open to amateurs who had never won a first prize at a previous show of the Society ; second, Mr. F. W. Hellizs, Kingston-on-the-Hill ; third, Mr. F. W. Tomalin, Hampton, Middlesex.

There were many fine vases in Class X, for three spikes of one variety, under the same conditions as for Class IX, Miss Pesel being first with grand blooms of Marjory Tinley, rich lavender; Mr. F. W. Tomalin, with Greven, and Mr. E. C. Levett, Kingston-on-the-Hill, shared the second place, the latter exhibitor showing Jacquiniana. Miss Pesel was also successful in Classes XI and XII for three varieties of white or cream bearded Irises and yellow bearded Irises respectively.

In the class for twelve spikes of American bearded Irises, Mr. G. L. Pilkington, Lower Lee, Woolton, Liverpool, was awarded the American Iris Society's Medal for a handsome exhibit which included exceptionally good spikes of Shasta, Bravira, Kathlyn Fryer and Morning Splendour. Miss L. Pesel, Church Farm, Twyford, Berks., was awarded the first prize for six spikes of American bearded Irises.

There were five exhibits of six vases of Iris sibirica varieties. Mr. G. Yeld, Gerrard's Cross, Bucks., was first with a beautiful collection which included I. sibirica var. alba and the varieties Papillon, Dragon Fly and Nora Distin. Mr. G. H. Furness, Somerset, was second. Mr. G. L. Pilkington, the only exhibitor, was awarded the first prize for six excellent vases of bulbous Irises.

The class for a collection of species and varieties filled a fair space. The first prize was awarded to Sir William Lawrence, Bart., Burford, Dorking, who included vases of I. graminea, I. setosa, I. tectorum, I. sibirica and a dusky hybrid from I. sambucina × I. paradox. Mr. H. Fitzhugh was second.

The Gordon-Lennox Challenge Trophy, which was offered for an exhibit to demonstrate the decorative value of Irises, induced an interesting competition. The Trophy and Silver-gilt Medal were awarded to The London Gardens for a novel exhibit of bowls and baskets of Irises. The receptacles, pedestals and staging were all of silvery colour. Mr. R. Silvester, who was awarded a Silver Medal, had a varied exhibit of considerable fascination, among which a large, low vase of Irises with plants of Carex and Selaginella found many admirers. Messrs. Robert Green, Ltd., were also awarded a Silver Medal for an attractive exhibit, and this included a hamper of Irises, a Victor wreath and a charming table centre. A Silver Medal was awarded to Miss L. Pesel for a table of Irises in bowls and vases.

Non-competitive Exhibits.

The trade responded admirably to the Iris Society's appeal for support in making this show a success, with the result that the main portion of the new hall was filled with many splendid collections of Irises, which made a grand display, the competitive classes being chiefly confined to the aisles.

Facing the main entrance were several large, rectangular, raised beds of Irises ; that set up by Mr. Amos Perry, who used Nepeta Mussinii and ornamental foliaged shrubs in association with his Irises, being very fine. In the centre of the group were grand blooms of Zillia, rich lavender, and Prosper Laugier, the group being made up of masses of the large-flowered, lavender-blue Duke of York ; Mrs. Marian Cran, purplish-rose ; Odessus, Olive Murrell, Olympus, Belladonna, rich blue ; Souvenir de Madame Gaudichau, royal purple ; Nemoralia, slaty-lavender ; Lady Charles Allom, Norman Bates, smoky-plum-coloured, lit with gold, and many others. Clorinda, Yellow Moon, No. 1,851 and No. 1,857, were good yellow sorts ; others of outstanding quality in this collection being No.

802, with plum-purple standards and deep velvety-purple falls, the whole shaded from the centre with gold; No. 0,669, Mary Gibson, Tangerine, very richly coloured, and the giant-flowered Niagara.

Messrs. R. Wallace and Co., Ltd., also had a grand collection, which embraced many fine varieties, was arranged tastefully, and included several good seedlings. There were lovely blooms of Mrs. Marian Cran, the cream-coloured Ivory; Sir Galahad, purple; Majestic, Julia Marlowe, light purple, with darker falls; Evadne, Pioneer and Bruno, while among the unnamed seedlings of note were 160/2, with smoky-lavender standards and purple falls; 4/1, bright, rich blue; 1/15, lavender-blue standards and purple falls; 160/1, smoky, pale purple standards, with deeper velvety falls; and 18/16, a good bluish-purple sort.

Mr. George G. Whitelegg had a choice group which included the beautifully coloured Ambassadeur; Souvenir de Madame Gaudichau, Prospero, Mrs. Frank Tiark, the small-flowered, bright reddish-purplish Opera; Mrs. George G. Whitelegg, the exquisite Citronella, with clear, bright yellow standards and red-shaded and veined falls; and the popular and valuable Alcazar.

Messrs. Lowe and Gibson, Ltd., had good vases of Eldorado, Romany, the pink Rhoda, Quaker Lady, Iris King and Mary Gibson, together with several very choice seedlings; while Mr. Gavin Jones, in his massed group, included Alcazar, Ma Mie, Ambigu, Maori King, Prosper Laugier, Dawn and I. pallida var. Empress of India.

The circular, open space in the centre of the hall was bounded by four triangular beds, set up by Messrs. George Bunyard and Co., and the Orpington Nurseries Co., Ltd., respectively. The two beds arranged by the former firm would have been improved considerably had some attempt at "finishing' the exhibit been made; as it was, the baskets and vases, and the Iris roots wrapped in sacking, detracted somewhat from the otherwise bright effect of many really good blooms. Among tall sorts which formed the centre of these triangles were Yeoman, dalmatica, Yolande, rich, deep blue with purple falls, very fine; Mdlle. Schwarz, pale lavender; Morning Splendour, Mrs. H F. Bowles, Crusader, bright, rich blue; Souvenir de Letitia Michaud and the richly coloured Sirius; while of the choice sorts bordering the groups, the most striking were Iris King, Nene, very fine; Romany, Troost, Pioneer, rich purple; Magnifica, very large; Loreley, Mira, of very delicate shading; Billia, Shekinah, yellow; Eldorado, Fro and Ed. Michel, purplish-red.

From the Orpington Nurseries Co., Ltd., came many large baskets and boxes of good blooms, but here, again, the receptacles were very much in evidence. Souvenir de Madame Gaudichau, Gabriel, Mdlle. Schwarz, Lord of June, Shekinah and Aphrodite were shown in large clusters, while among the choicest sorts were the golden yellow Rialgar; rich blue Wedgwood; White Queen, Rosalba, Romola, Deuil de Valerie Mayet, very beautiful; Evadne, Romance, Fra Angelico, of uncommon shading; Diogenes, Grace Sturtevant, Seminole, Tenebrae and Majestic..

Messrs. Barr and Sons had a magnificent rectangular bank of blooms, crowned with sheaves of Queen Mary, Cottage Maid, Minnehaha, Viola, Mount Penn and Souvenir de Madame Gaudichau; other good sorts in this excellently arranged display being Magnifica, Ringdove, Quaker Lady, Lohengrin, Hon. Mrs. Kingcote, Lent A. Williamson, Wyndham, Lac Leman, Moliere, Troost, Mrs. H. Darwin and Mons. Aymard.

Messrs. Waterer, Sons and Crisp also provided a very attractive and tastefully arranged display, among their best sorts being Ballerine, Magnifica, Moliere, Vesuvius, Isolene, Ed. Michel, variegata aurea, Ilsan, the richly shaded Mons. Brun, Fryer's Glory, Eurydice, very fine; Flaming Sword, Oriflame, Deuil de Valerie Mayet, Lohengrin, Lord of June and Fro.

In the collection of choice sorts set up by Mrs. W. R. Dykes we noted, as outstanding, the beautiful, yellow Amber; Wedgwood, the slaty-white Moonlight; Drancos, a giant, purple-flowered sort; Iceberg, Cupavo, rose-purple; Molo, Priestess, Gilda, another yellow sort; Harmony, Peerless and Thrill, all very striking.

Mr. G. Reuthe had a mixed collection of bearded Irises, while Messrs. Daniels Bros. included good blooms of Mrs. Allan Gray, Asiatica, Mount Penn, Prosper Laugier and Walhalla, in their small group.

The Horticultural Department of the University of Reading was responsible for an interesting exhibit demonstrating the colour classification of the bearded Irises, while from the Royal Horticultural Society's Gardens at Wisley came a collection of old Iris varieties, taken from the standard Iris collection, and demonstrating very emphatically the remarkable advance made in the production of varieties of bearded Irises during recent years.

Another exhibit of high educational value was that set up by Mr. G. N. Bunyard, who has been making a special study of the diseases of the Iris for some time, and although his work is not yet nearly completed, he has already made some important discoveries. His exhibit, besides demonstrating the more familiar diseases of the Iris, such as Iris rust and Iris leaf-spot, and the damage done to foliage by frost, which might well be mistaken for fungus attack at a glance, also included two distinct types of rhizome soft-rot, which is responsible for considerable havoc among Iris plants. Mr. Bunyard has come to the conclusion, and it would appear to be a very important one, for, if true, it will upset all previous conception, that the soft-rot (No. 1), which is generally considered due to bacterial agency, is caused by some other agency, at present unknown, for after repeated attempts at inoculation of Irises with this bacteria, Mr. Bunyard has failed to produce rhizome-rot, which would suggest that the bacteria is not primarily responsible for this disease. The second type of soft-rot, however, is definitely caused by a Botrytis, and Mr. Bunyard staged a series of illustrations demonstrating the Botrytis organisms in the Iris tissues. But the most important trouble, which is likely to become a serious menace to Irises in this country, is what is known as "scorch" or "fire." Whether this is due to the presence of fungus or bacterial organisms, or is merely physiological, has not yet been determined, but Mr. Bunyard has carried out preliminary investigations, and work on it is also being carried out in other quarters. Soil conditions, in the matter of acidity, etc., would appear to have no influence, for the trouble which commences with the withering of the roots, followed by their death, and results in the browning and dying of the foliage (the specimens demonstrated only too well the state to which healthy Iris plants are reduced to by it) has been located at various places in this country, and in a variety of soils. So far, Mr. Bunyard has discovered three distinct fungi in affected plants, but it is too early yet to state how far any of these may be responsible for the trouble.

There were several very attractive exhibits of paintings of Irises. Mr. Frank Galsworthy, Chertsey, showed beautifully executed paintings of many varieties and species; the Royal Horticultural Society exhibited the late Mr. W. R. Dykes' original paintings of Irises; while Miss Ellen Willmott showed a grand series of Irises grown at Warley, painted by Mr. Champion Jones. An extensive series of Iris paintings was also exhibited by Mr. Caparne.

Horticultural Journals were also well represented, *The Gardeners' Chronicle* staging a collection of coloured plates and books, including some specially devoted to Irises; while *Gardening Illustrated* and *Amateur Gardening*, also had interesting exhibits of books, etc.

THREE COUNTIES' AGRICULTURAL.

The Three Counties' Agricultural Society is to be congratulated on the horticultural features in the great show held at Gloucester on June 5, 6 and 7, and it is true to state that nothing in this show ground attracted more attention and praise than the exhibits in the flower tent. The arrangements for this section were in the hands of Mr. S. Starr, the Secretary of the Gloucestershire Root, Fruit and Grain Society, and he was admirably supported by the exhibitors, all of whom represented the trade.

A charming feature at the main entrance was a formal garden of an old-world character placed there by Messrs. Hopwood and Sons, in which grey stone was used with good effect and gave the garden a typically Cotswold appearance. The same firm also set up a formal garden at the end of the tent, which was of very attractive appearance.

Sweet Peas were a great feature and the display set up by Messrs. Dobbie and Co. was much admired, particularly the big masses of Clarion, Mrs. A. Searles, Flamingo and Pinkie. Another exhibitor of Sweet Peas was Mr. J. Stevenson, who showed good flowers of a choice selection of varieties.

The Carnations shown by Mr. C. Engelmann were worthy of the reputation of this famous grower, and the splendid flowers exhibited called for many expressions of praise. Messrs. Allwood Bros. also sent a fine lot of Carnations, which included all the best-known varieties, both for indoor and outdoor cultivation.

There was a reminder of Chelsea in the fine display of Delphiniums of named varieties, and wonderful flowers of Begonias, staged by Messrs. Blackmore and Langdon, and this exhibit was much admired. Mr. A. Hurren set up a simple but extremely pretty paved garden flanked with flowering plants set out in beds and borders. Messrs. J. Kelway and Son filled a large space with an interesting collection of Pyrethrums, Delphiniums, Paeonies and Gladioli, which were all greatly admired.

A very interesting display of hardy flowers, many of them rare, came from the Colesborne Gardens (Mr. W. H. Walters) and attracted a good deal of attention. The collection of Polyantha and other Roses from the Madresfield Gardens, Ltd., which occupied one side of the tent, was very pleasing, the plants being well flowered and of very healthy appearance. Not the least interesting exhibit was a collection of Aquilegias, set up by Mr. Charles Wall, and near to it was a formal Iris garden arranged by Messrs. Bowell and Skarratt.

Messrs. J. Peed and Son arranged a nice group in which Hydrangeas, Caladiums and Liliums were conspicuous. A fine lot of Delphiniums was shown by Messrs. Hewitts, and Messrs Rich set up a miscellaneous collection of flowers. Messrs. Bakers made a grand show with Pyrethrums, Delphiniums and Larkspurs in great variety, and the rock garden on a table, arranged by Messrs. Maxwell and Beale, again reminded one of Chelsea.

Single Dahlias came from Mr. Thomas Robinson, while Messrs. J. Cypher and Son filled an end of the tent with a mixed group of fine plants. Messrs. B. Cant and Sons sent a beautiful lot of Roses, among which rambler varieties were conspicuous. Lupins and Irises staged by Messrs. Jarman and Co., were good. Messrs. Toogood set up a bank of Schizanthuses and Cinerarias, with some well-flowered Stocks in pots.

An extremely interesting collection of hardy flowers was shown by Messrs. J. Jefferies and Son, and a big display of Dahlias came from the King's Acre Nursery, who also set up a fine group of Hydrangeas. There were other attractive features, and it was generally agreed that the show was the best of the series organised by the Three Counties' Society.

DERBYSHIRE HORTICULTURAL.

A Party of over sixty members of the Derbyshire Horticultural Association recently visited Foremarke Hall and Gardens by kind permission of Sir Francis Burdett.

Mr. Baldwin, the gardener, met the visitors and conducted them round the grounds which are laid amid a scene that is extremely picturesque at this period of the year, abounding in rich woodlands, beautiful specimen trees and well-kept lawns.

Rose gardens and Lily ponds, surrounded by well-clipped Yews, gave added charm and surprise views, while the flowering shrubs and Primula japonica in many colours adjacent to the rock and water garden were full of beauty.

Foremarke Church (St. Saviour) in the grounds also claimed attention. Built in 1662 and consecrated by Bishop Hackett, the sundials on the exterior (one of which is dated 1650) and an old three-decker pulpit, told of ancient glory.

Peaches, Nectarines, Figs, etc., were accommodated in the glasshouses, all giving good promise of healthy crops.

ROYAL HORTICULTURAL.

June 11 and 12.—As often happens at the meeting following the Chelsea show, the R.H.S. Hall was filled with excellent exhibits of a pleasantly varied character. Orchids of good quality were freely shown and the Committee recommended one Award of Merit to a novelty. The stove and greenhouse plants included especially good Hydrangeas, Gloxinias and Primulas, and there were many collections of hardy border flowers, particularly of Irises, Pyrethrums and Paeonies. The Floral Committee recommended twelve Awards of Merit. Beyond a good exhibit of Tomatos in pots, the Fruit and Vegetable Committee had nothing to occupy its attention.

Orchid Committee.

Present : Sir Jeremiah Colman, Bart. (in the chair), Mr. Gurney Wilson (Hon. Sec.), Prince Shimadzu, Colonel Stephenson Clarke, Mr. Lionel de Rothschild, Mr. Frederick J. Hanbury, Mr. Stuart H. Low, Mr. R. Ashton, Mr. Charles H. Curtis, Mr. H. G. Alexander, Mr. S. Flory, Mr. Robert Paterson, Mr. H. H. Smith, Mr. J. E. Shill, Mr. Fred K. Sander, Mr. T. Armstrong, Mr. J. Cowan and Mr. A. A. McBean.

Although this Committee had no fewer than nine novelties before it, only one Award of Merit was granted and one Preliminary Commendation.

Award of Merit.

Laelio-Cattleya Hassallii var. alba, Arddarroch var.(Laelia Britannia var. alba × Cattleya gigas).—A very beautiful form, with ample white sepals and petals of fine substance. Lip very large, Tyrian-purple. Shown by Mrs. Brooman White, Arddarroch, Garelochhead.

Preliminary Commendation.

Miltonia Vida, Paterson's variety (M. Bleuana var. Reine Elizabeth × M. William Pitt).—A bright and attractive hybrid carrying two flowers on a quite small plant. The sepals and petals are crimson-purple ; lip of similar colour but softer hue, shading to rose-purple near the white margin. The radiating lines of the brown mask are edged with white. Shown by Robert Paterson, Esq. (gr. Mr. A. Merry), Stonehurst, Ardingly.

Groups.

A fine feature of the group set up by Messrs. Charlesworth and Co. was a specimen of Coelogyne burfordiense, with three long spikes of its green and dark brown flowers. Miltonias and Odontoglossums, however, made up the bulk of the display, the former including M. Charlesworthii, M. gattonensis, M. Lydia, M. Lena, M. Wm. Pitt and M. Princess Mary. A novelty for these days was Laelia tenebrosa, while Dendrobium acuminatum, Phaius Norman, Oncidium anchiferum, Renanthera Imschootiana and Bulbophyllum Lobbii added interest to the beauty of the Odontoglossums, Laelio-Cattleyas and Odontiodas.

A handsome group was arranged by S. G. Brown, Esq. (gr. Mr. Thurgood), Brownlands, Shepperton. Vanda teres, V. coerulea, Thunia Marshalliana, Brassia verrucosa and Epidendrum prismatocarpum formed a background for fine spikes of Phalaenopsis Rimestadiana, Dendrobium acuminatum with seven spikes, D. Victoriae-Reginae, Zygopetalum citrinum, Cattleya citrina, the old and now apparently rare Peristeria elata, Lycaste locusta, L. costata, Cypripedium Parishii, with eleven flowers, Miltonias and Odontoglossums in variety, and Epidendrum pentotis with seven spikes, for which a Cultural Commendation was awarded.

A lovely lot of Miltonias from Robert Paterson, Esq. (gr. Mr. A. Merry), Stonehurst, Ardingly, attracted a great deal of attention, and won great admiration. Particularly fine were the examples of M. Lycaena var. gigantea, M. vexillaria var. Snowflake, M. gattonensis, M. Nellie Smith, M. Hyeana, M. Nadia, M. Bleuana, M. Mona, M. Wm. Pitt, M. Charlesworthii and the handsome M. Lucia, Paterson's variety.

Messrs. Stuart Low and Co. showed a small group which contained Laelio-Cattleya G. S. Ball, L.-C. Stevenson, L.-C. Aphrodite, Dendrobium Falconeri, Odontoglossum Williamsii, Miltonias, Masdevallias and Odontiodas.

Messrs. Sanders had a pretty exhibit wherein the long-spiked Oncidium Wentworthianum figured as a centrepiece. Around this were grouped Miltonias in great variety, Thunia Veitchiana, Dendrobium infundibulum, Cattleya Dupréana, C. Eve, a white hybrid between C. Undine and C. Lady Veitch, Odontioda Coronation, Stanhopea grandiflora with two flowers, Aerides Fieldingii, Lycaste cruenta var. majus, and Odontoglossum cordatum.

Baron Bruno Schröder (gr. Mr. G. E. Shill), Dell Park, Englefield Green, showed a lovely Miltonia named Snowflake, with white flowers, tinged with mauve at the bases of the petals, and a deep dark red-brown mask on the lip ; and M. William Pitt, Dell Park var., with three brilliant flowers.

Floral Committee.

Section A.—*Present :*—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel Wightman, Mr. C. F. Langdon, Mr. N. Champion Haskett, Mr. A. E. Vasey, Mr. Donald Allan, Mr. D. B. Crane, Mr. J. M. Bridgeford, Mr. W. B. Gingell, Mr. R. Findlay, Mr. D. Ingamells, Mrs. Helen Lindsay Smith, Mr. J. T. West, Mr. G. W. Leak, Mr. W. Howe, Mr. E. R. Janes, Mr. Courtney Page and Mr. W. D. Cartwright, Secretary.

Section B.—*Present :* Mr. Charles T. Musgrave (in the chair), Mr. W. J. Bean, Mr. James Hudson, Mr. F. G. Preston, Mr. T. W. Taylor, Mr. A. Bedford, Mr. James Comber, Mr. W. B. Cranfield, Mr. Clarence Elliott, Lady Beatrix Stanley, Mr. G. Reuthe, Mr. Mark Fenwick, Mr. R. W. Wallace, Hon. H. D. McLaren, Mr. E. R. Wilding, Mr. L. R. Russell, Mr. George Yeld, Mr. T. Hay, Mr. Reginald Cory Mr. E. A. Bowles and Mr. N. K. Gould, Secretary.

Awards of Merit.

Carnation Flambeau.—A border variety of fine form with flowers on stiff stems. The colour is rich soft reddish-orange, the deepest shade being at the edges of the wide petals. Very faintly scented. Shown by Mr. James Douglas.

Grammatocarpus volubilis (syn. Scyphanthus elegans).—A slender, twining, hardy annual plant with elegant, much divided leaves and long-petioled flowers. The latter suggest both a Tropaeolum and a Columbine. They are rounded, clear yellow, with prominent brown anthers. The petals are bluntly spurred, and between these spurs a curious horned scale is bent at an angle like another spur. Calyx segments linear and deep green. Figured in *Bot. Mag.*, t. 5,028. Collected by Mr. Clarence Elliott during his Chile-Andean expedition. Shown by Major S. F. Harrison (gr. Mr. A. S. Hartless), King's Walden Bury, Hitchin.

Pentstemon procerus.—This name was given subject to verification. P. procerus is figured in *Bot. Mag.*, t. 2,954, but while the flowers are similar, the habit of the plant illustrated is different from that of the one exhibited. The stout growths remind one of the Soapwort, but they terminate in spikes of soft blue, mauve-tinted flowers. The spikes range from ten inches to nearly eighteen inches in length. Exhibited as a hardy plant. Shown by Sir William Lawrence, Burford, Surrey.

Heliophila linearifolia.—A charming, half-hardy South African annual of slender, elegant habit. The leaves are narrowly linear, about three inches long. The stems are slender and wiry, bearing branching spikes of round, white-eyed, blue flowers that are daintily beautiful, the blue being slightly deeper at the base of each of the four petals than on the limb. The plant will evidently need support because of its slender habit. Shown by Mr. T. Hay, Hyde Park.

Cynoglossum cashmerianum.—A plant that combines the elegance of a Forget-me-not with the sturdiness of a Borage. The rich green leaves clasp the stem and are soft to the touch. The flowers, about half-an-inch across, are deep blue and borne in branching cymes at the ends of the growths. Shown by Messrs. B. Ladhams, Ltd.

Lewisia pygmaea.—A charming little dwarf member of this popular genus, from British Columbia, and one of the choicest rock garden plants. It forms a close clump of rosettes of strap-like, grey-green, smooth and fleshy leaves, tinged with red down the centres, and produces very freely, on branched stems two inches high, white flowers about one inch across when expanded, flushed and veined with light reddish-purple ; their beauty is further enhanced by the crimson calyces, which are distinctly toothed. This choice alpine was shown by The Director, R.H.S. Gardens, Wisley.

Stapelia nobilis.—A plant of this Succulent, carrying one huge flower—quaint, but with no pretentions to attractiveness—was shown. It has erect, fleshy, four-angled growths six inches or so in height, the star-shaped flower, about nine inches across, having five large lobes spreading outwards from a central cavity and tapering at the apex. The flower is of a pale biscuit colour, heavily veined with horizontal, purplish markings, the margins being purple-marked, and the whole covered with hairs of similar colouring. Shown by E. M. Preston, Esq. (gr. Mr. G. F. Wood), The Warren, Hayes, Kent.

Chiliotrichum rosmarinifolium.—This interesting Chilean shrub, a member of the Natural Order Compositae, has narrow, dark green and glossy leaves, packed closely on the younger growths, its pure white, narrow-petalled flowers—like small Marguerites—being borne profusely at the ends of the previous season's growths, on stems three inches in length. Shown by Sir William Lawrence, Bart., Burford.

Pentstemon utahensis.—A tall-growing species producing pairs of short-stemmed clusters of striking, azure-blue flowers, mauve-coloured in bud, from the axils of large, rich green, leaf-like and heavily toothed bracts, at intervals along the stout, hairy, red-tinted stems. Shown by Mr. T. Hay, Hyde Park.

Calceolaria biflora.—This Calceolaria appears to us to be identical to C. plantaginea, figured in the *Botanical Magazine* (t. 2,805). It is not unattractive in appearance, and is of compact habit, forming a close mass of rather ample, broad, dark green foliage, from among which arise red-tinted, slender, hairy stems to a height of about one foot, usually bearing two large, rounded-pouched, rich yellow flowers. It is doubtful whether this Calceolaria, from Chile, will prove hardy, but it should prove a useful addition to the list of summer-flowering subjects for the rock garden. Shown by Lieut.-Col. L. C. R. Messel, O.B.E. (gr. Mr. J. Comber), Nymans.

Calceolaria Benthami.—This is an extremely charming herbaceous Calceolaria of dwarf, compact habit and, judging by the specimen shown, very free-flowering, for it produces a mass of slender, branching stems up to about ten inches high, and these are laden with small, rounded, golden-yellow flowers. The small, slender-ovate, grey-green, hairy leaves form a close clump. It would appear to be a good perennial. Shown by Lieut.-Col. L. C. R. Messel.

Lathyrus magellanicus.—This beautiful "Everlasting" Pea has handsome spikes of flowers, five or more in number, and carried on strong, erect stems. The flowers have rich, rose-purple wings and paler keels, which, however, vary somewhat in depth of colouring. Also shown by Lieut.-Col. L. C. R. Messel.

For Trial at Wisley.

Lupinus polyphyllus var. Duke of Richmond.—A very handsome spike of deep rose-coloured flowers.

L. p. var. Reason.—A pretty bicolor variety. The keel is pale pink and the standard is a deeper shade of the same colour. This and the above were shown by Mr. J. A. Downer.

L. p. var. Grace Fanwell.—An uncommon and attractive bicolor variety. The keel is coloured pale buff, and the standard is a dull terra-cotta. Shown by Messrs. M. Prichard and Sons.

Iris T. W. Thornton.—A tall bearded Flag Iris. The flowers were large and a trifle congested. The standards are pale blue, and the falls a slightly deeper blue. Shown by Mr. F. Bostock.

Pyrethrum Red Emperor.—A robust, single-flowered variety. The ray florets are broad, stiff, and of velvety-crimson colour. Shown by Mr. Herbert Robinson.

Salvia Simmonsii.—A very dwarf and free-flowering variety of Pride of Zurich type. The flowers are of dazzling scarlet colour. Shown by Mr. H. Simmons.

Groups.

Immediately inside the hall a magnificent group of Hydrangeas was exhibited by Baron Bruno Schröder (gr. Mr. E. J. Henderson), The Dell Park, Englefield Green. The plants all displayed superb cultivation and the group was arranged with great skill. The chief varieties were Rubis, Le Marne, Madame Moulliere and Madame Chautard, which bore immense, shapely trusses. In the centre there was a graceful Kentia Belmoreana, surrounded by the brilliant Hydrangea Parsifal, and well-grown specimens of various Dracaenas added to the beauty of the group. In another part of the hall, Messrs. H. B. May and Sons had an attractive group of Hydrangeas.

At the far end of the hall, the centre position was filled with a very charming group arranged by Messrs. Sutton and Sons. This contained circles of splendid Gloxinias and Primula obconica set in a mossy ground in which were placed Ferns and small plants of various Codiaeums (Crotons) and Cocos Weddelliana. The Primulas were especially floriferous and in batches of distinct colour varieties, such as Salmon Queen, Salmon King, Giant Crimson and Giant Pink.

The walls at the Elverton Street exit were particularly attractive with magnificent massed Zinnias backed by Clerodendron fallax, arranged by Messrs. Sutton and Sons. An interesting collection of miscellaneous greenhouse plants, arranged by Messrs. Stuart Low and Co., included Metrosideros floribunda, Boronia elatior, Hedychium Gardnerianum and various Ericas.

Carnations were well shown. Mr. James Douglas had an especially good collection of his border varieties. The novelties included Fancy Free, a good Fancy which has bright scarlet lines on a pink ground, and Hobby Elliott, a white-ground Fancy, freely marked with rosy-purple. Calypso is chiefly of smoky heliotrope colouring with a citron base and occasionally flushed with rosy-pink. Among the older varieties were Sunflower, Edenside Beauty and Swarthy Clove, of delicious fragrance. Their customary collections of good greenhouse Carnations were staged by Messrs. C. Engelmann, Ltd., Messrs. Allwood Bros., and Messrs. Stuart Low and Co.

At the far end of the hall, Messrs. Dobbie and Co. set up an extensive collection of excellent Sweet Peas. Their novelties included Clarion, rosy-purple, and Blue Flame, an uncommon bicolor. They also had charming bowls of Royal Sovereign, Flamingo, Magnet, Mrs. A. Searles, Idyl and Gleneagles.

Pyrethrums were particularly well shown. In their collection, Messrs. Kelway and Son included such good singles as Eileen Kelway, soft pink; Eileen May Robinson, medium pink; and Mrs. Bateman Brown, deep rose; while among the doubles were Lord Rosebery, crimson, and Virgo, creamy-yellow. They also showed Paeonies and Gladioli. Messrs. Barr and Sons showed many good Pyrethrums with Irises, Lupins and Heucheras. Miscellaneous border flowers were staged by Messrs. Wilson and Agar, Mr. Stephen Sims, Messrs. W. H. Rogers and Son, Messrs. E. J. Redgrove and Son, Mr. George E. P. Wood, Mr. Gavin Jones, Messrs. B. Ladhams, Ltd., and the Suffolk Seed Stores.

Collections of desirable Lupins were arranged by Mr. G. R. Downer, and Messrs. Prichard and Sons. Messrs. Tuckers, Ltd., had a good selection of alpines; Messrs. Maxwell and Beale included the yellow Gazania Vanity and Primulas in their rock garden. Mr. J. Robinson had good breadths of Cheddar and other Pinks. Messrs. Solihull set up tall spikes of Delphiniums with Lupins; and the Rolvenden Nurseries grouped a large quantity of Statice profusa var. superba.

A brilliant group of Rhododendrons was exhibited by Messrs. Waterer, Sons and Crisp. The pink varieties were especially prominent and these included Prince of Wales, Philip Waterer, and a good, deep pink raised from R. discolor and a hardy hybrid. Messrs. Patricks grouped deciduous Azaleas with Kalmias, Brooms and Philadelphuses. Mr. J. H. Pemberton included well-flowered sprays of Austrian Yellow and R. Sinica var. Anemone in a collection of Roses.

There were several charming exhibits of bearded Irises at this show, the mound of blooms arranged by Messrs. Waterer, Sons and Crisp, Ltd., with various brightly coloured Pyrethrums at each end, being very fine. The central group of Ambassadeur was outstanding, other prominent sorts including Asia, Rhein Traube, Isoline, Corrida, John Waterer, Prospero and Shikinah.

Mr. George G. Whitelegg had a small collection of choice sorts, such as Eldorado, Honorbile, Ballerine, Asia, Ambassadeur, Goldcrest, Lord of June, Alcazar, Mrs. Valerie West, and several good seedlings under numbers, while Messrs. R. Wallace and Co., Ltd., showed many grand Irises in conjunction with Eremuri, Lupins and Liliums, including L. regale. L. pyrenaicum, L. Brownii and L. elegans var. Mahogany. Among their Irises, Lady Foster × Bruno, Susan Bliss × Roseway, flavescens alba, Mesa, Pioneer, Lent A. Williamson, Florence Wells, Souvenir de Madame Gaudichau, Stamboul and Melchior were noteworthy, but their grandest blooms were of unnamed seedlings.

Messrs. George Bunyard and Co., Ltd., showed excellent blooms of Souvenir de Letitia Michaud, Corrida, Loreley, Glitter, Ballerine, Ambassadeur, Alhena, Izar, Phieda, Dusky Maid, Vannessa and Iris orientalis var. Snow Queen, in their attractive collection; while among the many grand sorts exhibited by the Orpington Nurseries Co., Ltd., the most noteworthy were Edouard Michel, Afterglow, Romance, Titan, Evadne, very bright; Souvenir de Madame Gaudichau, Shikinah, Neptune, Lord of June, Romola, Mother of Pearl, Fro, Brilliant, Sir Michael and Wedgwood, to mention but a few.

Fruit and Vegetable Committee.

Present: Mr. W. Poupart (in the chair), Mr. W. H. Divers, Mr. A. Bullock, Mr. H. Markham, Mr. E. A. Laxton, Mr. P. H. Tucker, Mr. A. Poupart, Mr. F. Bostock, Mr. E. Beckett, and Mr. A. N. Rawes, Secretary.

This Committee had no business of importance to conduct.

Groups.

Messrs. S. Bide and Sons showed about a dozen fully-grown plants of their new Tomato Bide's N.C.O., a heavy cropper, judging by the giant trusses of excellent fruits each plant was carrying.

The Ministry of Agriculture had an exhibit of Tomatos and Cucumbers packed and graded as required under the National Mark scheme, which proved very instructive to commercial growers of these commodities.

Obituary.

Robert John Harvey-Gibson.—The announcement of this eminent Scottish botanist's death was received with extreme regret in Aberdeen University circles. The son of the late Rev. Robert Gibson, a minister of the Scottish Episcopal Church, Professor Harvey-Gibson spent his boyhood days at Cuminestown, Aberdeenshire, where his father was priest in charge. From thence he proceeded to the Aberdeen Grammar School, where he won the Drum Presentation Bursary of £40. There he made capital progress, and in due course entered Aberdeen University, where he graduated in 1880, and has proved one of his Alma Mater's most distinguished sons. He also passed through the Universities of Edinburgh and Strassburg, where he showed eminent ability for his lifework as a botanist. Dr. Harvey-Gibson's first public appointment was as demonstrator of zoology in Edinburgh University in 1882, and the following year as demonstrator of physiology at the same university. In 1885, Professor Harvey-Gibson entered upon his lifework at University College, Liverpool, where, in turn, he was demonstrator of biology and lecturer in botany. In 1891 he was appointed to the Chair of Botany at the University of Liverpool, becoming Dean of the Faculty of Science in 1902. There, until 1921, when he retired, Dr. Harvey-Gibson made many valuable contributions to science. He acted as an examiner of botany in Aberdeen University in 1893, and was assistant examiner in the University of London Science and Art Department in the year 1896-1897. He also held appointments as examiner in the universities of Glasgow and Durham, and filled a similar rôle to the Pharmaceutical Society of Great Britain. He was sixty-nine years of age. The passing of Professor Harvey-Gibson reminds us that the Nor'-East Neuk of Scotland has sent out to the world a large number of scientists who had the happy knack of imbuing in those around them an intense love for natural history. Harvey-Gibson was an outstanding figure among them. His teacher, the late Dr. James W. H. Trail, one of the most lovable and gentle of men, who for four decades occupied the Chair of Botany in Aberdeen University, did valuable work in this respect. Wherever he saw the spark of a desire for knowledge in natural history, he very quickly kindled it into flame, and he fostered these principles in his pupils. Thus throughout the whole world there are and have been pupils of his, like Harvey-Gibson, carrying-on the good work. Dr. Trail, in his day, gave valuable assistance and encouragement to the Aberdeen Working Men's Natural History Society—a replica of which few towns or cities can boast. We are also reminded that the Nor'-East of Scotland gave us from the ranks of the humblest folks, men who earned a wide reputation for their knowledge of the flora, fauna and geology of their respective districts. There was Thomas Edward, the Banff shoemaker and naturalist, whom Smiles made famous; the Kincardineshire weaver, John Duncan, whose botanical survey of the valley of the river Don, which flows through Aberdeenshire, is unique. His specimens, the results of years of labour and research, now hold an honoured place in the botanical department of Aberdeen University. Then there was George Sim, the Aberdeen naturalist and antiquary. His shop in Castle Street, Aberdeen, was a place of pilgrimage for the antiquary, botanist, biologist and zoologist. A little farther north, the name of Hugh Miller, the eminent geologist, looms large.

Joseph Thrower.—His many friends will hear with deep regret of the demise of Mr. Joseph Thrower, on Sunday, June 9. Seventy-five years of age, he commenced his horticultural career in the gardens at Sandringham, then but recently acquired by King Edward VII. Afterwards, he spent two years in Paris, in a private garden, and on his return to England, entered the service of Messrs. Wm. Bull and Sons, of Chelsea, and was with them for nearly forty years, acquiring during that time a whole circle of friends and acquaintances. Later, he went to Mr. L. Russell, of Richmond Nurseries, and finally, in 1918, he took up a traveller's position with Messrs. Sanders, of St. Albans, with whom he remained until his death. During his long career he acquired an extensive knowledge of plants, particularly of stove and greenhouse subjects, and was often referred to when an occasional old time plant was shown. Possessor of a kindly, genial nature, a deep sense of humour, and the happy faculty of pointing his remarks with an appropriate anecdote, he will be widely missed, both in London and the provinces.

ANSWERS TO CORRESPONDENTS.

FIRE IN TULIPS.—*F. W. S.* The Tulip stems and foliage are infected with Botrytis tulipae, which causes "fire" in these plants. The symptom mentioned is one of the lesser recognised symptoms of this disease. Cut down and burn all infected stems. Lift the bulbs and examine them for small black bodies (sclerotia) on the outer scales, discarding those with sclerotia. Do not replant in infected ground.

LABURNUM WITH YELLOW, CREAMY-PURPLE AND PURPLE FLOWERS.—*G. R. L.* Your Laburnum is L. Adami, one of the most interesting trees in cultivation, being what is known as a graft hybrid. It originated in Mr. Jean Louis Adams' nursery at Vitry, near Paris, in 1825. The purple Broom (Cytisus purpureus), was grafted on a common Laburnum, and later flowers of a colour intermediate between those of the stock and scion appeared on the plant. A few years after this, another remarkable phenomenon took place, and it commenced sporting back to its parents, producing branches here and there of pure Laburnum vulgare and pure Cytisus purpureus. This accounts for the three distinct types of flowers on your tree. The validity of the above account was doubted until it was proved possible to produce graft-hybrids. A graft-hybrid between the Tomato and Black Nightshade was obtained by Professor Winkler, of Tubingen, and the several forms of Crataego-Mespilus present other instances. These graft-hybrids are called "chimaeras"—they appear to be a mixture of the tissues of the parents (under the microscope the tissues of the two are discernible), rather than a genuine fusion of the one parent with the other.

MELON AND CARNATION DISEASED.—*W. H. M.* No parasitic fungus was found on the Melon plant. The trouble may arise from injudicious watering and ventilation. The Carnation foliage is affected with stigmonose, which arises from the injection into the tissues of the plant of an irritant from the attacks by aphides, thrips and red spider. Keep down these pests by fumigating and forceful daily syringings with clear water. Red spider was present on the foliage. The Begonia leaf infested with mite was not enclosed. If mite is present, dip the plants in a nicotine soap wash.

NAMES OF PLANTS.—*G.* 1, Rose Double Yellow Banksian; 2, Phillyrea latifolia var. ilicifolia; 3, Orobus variegatus; 4, Pyrus floribunda var. atrosanguinea; 5, Libertia formosa; 6, impossible to name, send a fully developed specimen; 7, Olearia linifolia; 8, Berberis vernae; 9, Syringa (Lilac) Rubra de Marly; 10, Syringa (Lilac) Souvenir de Louis Späth; 11, Jasminum primulinum; 12, Olearia odorata.—*G. G. T.* Rubus deliciosus.

TOMATOS DISEASED.—*J. R. D.* It is quite impossible to diagnose the cause of the injury from the meagre specimen enclosed. The trouble may probably be traced to unhealthy root action. The tip of the shoot is free from any pathogenic organism.

Communications Received.—A. T. J.—W. O.—A. W. H.—T. P.—H. F.—A. K.—T. K.—A. C. B.—J. A. P.—R. E. M.—T. H. E.—W. L.—A. J. T.—F. H. W.

MARKETS.

COVENT GARDEN, Tuesday, June 11, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum, per doz.	10 0-12 0
—elegans ...	10 0-12 0
Aralia Sieboldii	8 0—9 0
Araucarias, per doz.	30 0-40 0
Asparagus plumosus ...	12 0-18 0
—Sprengeri ...	12 0-18 0
Aspidistras ...	16 0-60 0
Aspleniums, doz.	12 0-18 0
—32's	24 0-30 0
—nidus ...	12 0-15 0
Cacti, per tray, 12's, 15's ...	5 0—7 0
Cinerarias, per doz.	21 0-24 0
Crotons, per doz.	30 0-45 0
Cyrtomiums ...	10 0-12 0
Erica persoluta, per doz. ...	24 0-36 0
Fuchsias, per doz.	12 0-18 0
Heliotropes, per doz.	15 0-18 0
Hydrangeas, white, per doz.	24 0-30 0
—pink and blue, per doz. ...	24 0-36 0
Lilium longiflorum, per doz.	18 0-24 0
Marguerites, white, per doz.	16 0-21 0
Mignonette, per doz.	18 0-24 0
Nephrolepis, in variety ...	12 0-18 0
—32's	24 0-36 0
Palms, Kentia,	30 0-48 0
—60's	15 0-18 0
Pelargoniums, per doz. ...	9 0-18 0
Primula malacoides, 60's, per doz. ...	7 0—8 0
Pteris in variety	10 0-15 0
—large, 60's ...	5 0—6 0
—small „ ...	4 0—5 0
—72's, per tray of 15 ...	2 6—3 0
Rhodanthe, pink and white ...	12 0-15 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	9 0-10 0
—cuneatum, per doz. bun. ...	5 0—6 0
Anemone St. Brigid, per doz.	3 0—5 0
Arums (Richardias), per doz. blooms ...	3 0—4 0
Asparagus plumosus, per bun., long trails ...	2 6—3 0
—med. sprays	2 0—2 6
—short „	0 9—1 0
—Sprengeri, bun. long sprays...	2 0—2 6
—med. „ ...	1 6—2 6
—short „ ...	1 0—1 3
Carnations, per doz. blooms	2 0—5 0
Coreopsis, per doz. bun. ...	5 0—6 0
Cornflower, blue, per doz. bun.	2 0—3 0
—pink, per doz. bun.	2 0—3 0
Croton leaves, per doz. ...	1 9—2 6
Delphinium, blue, per doz. spikes	5 0—6 0
Ferns, French, per doz. bun.	10 0-12 0
Forget-me-nots, per doz. bun.	6 0—9 0
Gladiolus, Blushing Bride, per doz. bun. ...	18 0-24 0
—The Bride, per doz. bun. ...	12 0-15 0
—Peach Blossom, per doz. bun.	18 0-24 0
—Scarlet, per doz. spikes ...	4 0—5 0
—Primulinus, per doz. spikes ...	4 0—4 6
—large varieties, per doz. spikes	4 0—6 0
Gypsophila elegans, white, per doz. bun.	6 0—9 0
Heather, white, per doz. bun.	9 0-12 0
Iceland Poppies, per doz. bun.	2 6—3 6
Iris, Spanish, blue, per doz. blooms	1 0—1 6
— — white, per doz. blooms	1 3—1 6
— — yellow, per doz. blooms	1 0—1 6
— — mauve ...	1 3—1 6
Larkspur, mauve, per doz. spikes	2 6—3 6
Lilium longiflorum, long, per bun. ...	3 0—3 6
— — short, per doz. blooms	2 6—3 0
—speciosum rubrum, long, per doz. ...	4 0—5 0
— — — short, per doz. ...	2 6—3 0
Lily-of-the-Valley, per doz. bun.	18 0-30 0
Marigolds, per doz. bun. ...	5 0—6 0
Myrtle, green, per doz. bun.	1 6—2 0
Nigella, blue, per doz. bun.	9 0-12 0
Orchids, per doz. —Cattleyas ...	18 0-30 0
Paeonies, red, 6's, per doz. bun.... ...	9 0-12 0
—white, per doz. bun.	10 0-12 0
Pyrethrum, single red, per doz. bun. ...	2 0—3 0
—single pink, per doz. bun.	3 0—5 0
—double pink, per doz. bun.	3 0—4 0
Roses, per doz. blooms—	
—Columbia ...	3 0—4 0
—Richmond ...	2 6—3 6
—Yellow ...	2 6—3 6
—Molly Crawford	2 6—3 0
—Butterfly ...	2 6—3 6
Smilax, per doz. trails ...	5 0—6 0
Statice, mauve, per doz. bun.	4 0—5 0
—Suworowii, per doz. bun.	9 0-18 0
Stock, double white, per doz. bun.... ...	9 0-18 0
—double pink, per doz. ...	12 0-15 0
Sweet Peas, various, per doz. bun.... ...	6 0-24 0

REMARKS.—All Pyrethrums are now arriving in very large quantities, in both single and double varieties, but are somewhat varied in quality and price: the variety Eileen Robinson, a single pink, is very fine. Carnations, although fairly plentiful, have been of poor quality, good blooms being scarce. Roses have met with a good demand but, like Carnations, the first grade blooms are soon cleared, therefore prices still remain firm. Among Irises, the best blooms are from home-growers, Imperator (blue) being most plentiful; good white and yellow Irises are scarce. Very large consignments of these blooms have been arriving from Cornwall and Guernsey, but they are not well packed and many blooms arrive in a damaged condition and have to be sold at very low prices in order to clear. More Gladioli are on offer, including some very good blooms of the large-flowered varieties. Blue and pink Cornflowers are lower in price owing to increasing supplies, as also are Iceland Poppies. Sweet Peas have been more plentiful, but, like all other lines throughout this department, best grades have been limited and soon cleared. The newest arrivals in this department are Coreopsis, blue and pink Larkspurs, large white Daisies, and white Pink Her Majesty; a few bunches of Statice sinuata from home-growers have been on sale.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus—	
—Devon ...	4 0—4 6
—Evesham ...	1 6—3 0
—Giant ...	6 0-12 0
Beans—	
—Worthing, finest, per lb.	1 3—1 9
—Guernsey ...	1 3—2 0
Beet, per bag ...	4 0—6 0
Cabbage, Spring, crates, 24's-30's	3 0—5 0
Carrots, French, per doz. bun.	4 0—9 0
Cauliflowers, per doz.	5 0—6 0
Cucumbers, per flat	14 0-20 0
Endive, French, per crate, 18's and 24's ...	8 0—9 0
Lettuce, Cabbage—	
—English, per dozen ...	1 0—2 0
—Cos	1 6—3 0
Mint, per doz. bun.... ...	2 0—3 0
Mushrooms—	
—cups, per lb.	1 0—1 6
—broilers ...	0 8—1 0
Parsnips, per cwt. ...	5 0—6 0
Peas, French, per bag ...	5 0—8 0
—English, per lb.	2 0—3 0
—Outdoor ...	1 0—1 6
—Guernsey, per lb.	1 0—2 6
Potatos—	
—Jersey, per cwt.	— 10 0
—Spanish, per cwt. ...	5 0—6 0
—Canary Islands, per case ...	8 0-10 0
—Azores, per case	8 0-10 0
Tomatos, English, per box of 12 lbs.—	
—pink	8 0—9 0
—pink and white	8 0—9 0
—white ...	7 0—8 0
—blue	6 0—7 0
—Guernsey ...	8 0—8 6
Turnips, French, per doz. bun.	8 0-10 0

REMARKS.—There has been little fault to find with the demand generally this week. The weather has been good and most sections report active conditions. In the choice fruit section, Grapes, Peaches, Nectarines, Figs and Canteloup Melons are all in demand. Strawberries are selling well, although values of forced Strawberries are naturally affected by the increasing supplies from the Southampton district. Gooseberries are plentiful and prices lower, but considering the ample supplies available from the west of England, as well as Kent, prices are fairly good, especially in face of the competition of Dutch berries. The stocks of Australian Apples on hand are sufficient for the demand at present prices, and the tendency is easier. Oranges are available from South Africa, Brazil, California and Spain, and lower figures are expected in that section, although warmer evenings should have a bracing effect on values. Some excellent Cherries are being marketed from Italy, and find buyers at comparatively high prices. Apricots from Spain are more plentiful and sell fairly well. Bananas from Jamaica, the Canary Islands and Brazil sell freely at the moment. Tomato supplies are heavy for the time of the year and prices are at a comparatively high level; Cucumbers also are doing well. Asparagus has shown much improvement in values as compared with recent levels, and it is to be hoped these conditions will last for the short period that the cutting has to continue. Forced Peas, Beans and Marrows have been costly, although supplies have not been short. Mushrooms are abundant and prices are on the low side. New Potatos from Spain, Jersey and Cornwall are selling rather too cheaply to bring much satisfaction to the producers. Salads continue to sell well, and the supplies of green vegetables generally are ample for all requirements.

GLASGOW.

An improved demand for cut flowers helped to steady prices last week, except in the case of Irises, which were cheaper owing to excessive supplies; ordinary blooms were worth 2s. to 4s. per dozen bunches of 6's, and white, special qualities, 5s. to 6s. Tulips are nearly over for the season, the varieties being limited to William Saunders, at 9d. to 10d. for 12's; Clara Butt, 6d. to 9d., and yellow, 7d. to 8d. Gladioli were dearer, The Bride realising 1s. 2d. to 1s. 6d.; and Maiden's Blush and Blushing Bride, 1s. 4d. to 1s. 6d. Roses and Carnations fluctuated between 3s. and 4s. 6d. per dozen; Arums (Richardias), 2s. to 3s.; L. longiflorum, 3s. to 4s.; Pyrethrums, 1s. to 2s. 6d., special, 3s. to 5s.; Lily-of-the-Valley (inside), 1s. 6d. to 2s. per bunch; outside, 3s. to 4s. per dozen bunches; double Stocks, 1s. to 1s. 6d.; Anemones, 1s.; Nigella, 1s. 6d.; Paeonies, 1s.; Sweet Peas, 4d. to 1s. 3d.; Lilac, 6d.; and double white Narcissi, 3d. to 5d.

Business in the fruit market also indicated signs of expansion. Cheddar Strawberries sold from 1s. 9d. to 2s. 3d. per lb.; home-grown Melons, 9s. 6d. each; Peaches, (locally grown), 1s. to 1s. 6d. each; hothouse Grapes, 3s. 3d.; Pineapples, 3s. 6d. to 4s. each; Apricots, 12s. 6d. to 17s. 6d. per box; Cherries, 12s. to 16s. (20 lbs.); Gooseberries, 3d. to 4d. per lb.; Grape Fruits, 28s. to 32s. per case according to counts; Apples, Oranges and Pears remained unchanged.

Home-grown Tomatos are arriving in larger quantities and prices dropped to 10d. per lb., with best grades up to 1s. 1d. Asparagus sold at 3s. to 4s. 6d. per bundle; Scotch Lettuces, 2s. to 4s. per dozen; Dutch, 1s.; Cucumbers, 5s. to 7s. 6d.; home-grown Peas, 2s. 6d. per lb.; Guernsey Peas, 1s. 3d.; Guernsey Beans, 1s. 3d. to 1s. 6d.; Radishes, 3s. to 4s. 6d. per dozen; Carrots and Turnips, 1s. to 1s. 2d. per bunch; Syboes, 6d.; and Mushrooms, 2s. per lb.

THE
Gardeners' Chronicle
No. 2217.—SATURDAY, JUNE 22, 1929.

CONTENTS.

Alpine Garden—
  Coronilla cappadocica 461
Book, notice of—
  Debt collecting without tears.. ... 464
Capp, Mr. F. 456
Cherries, flowering ... 466
Fruit-growing, Jones-Bateman cup for research in 455
Hair worms in gardens 464
Heterosis 455
Iris, the, as an economic plant... ... 465
Iris garden—
  Iris ensata 461
Jealott's Hill Research Station 456
Lancetilla Experiment Station 462
Lewisia Howellii ... 455
Manchester Parks and Recreation Grounds, Handbook of ... 456
Meconopsis Baileyi at Wisley 466
National Sweet Pea Society 457
Obituary—
  Kirch, Carl... ... 469
Plants new or noteworthy—
  Rhododendron Vanessa 464
Primula, the genus ... 466
Scottish Forestry Commission, difficulties of the 466
Societies—
  Royal Caledonian Horticultural ... 468
  Salisbury Gardeners' 469
  Societe Nationale d'Horticulture de France 468
  United Horticultural Benefit and Provident 468
  York Gala 467
Sweetest-scented flower, the 466
Trees and Shrubs—
  Elaeagnus multiflorus 460
  Viburnum tomentosum var. Mariesii 461
Turbat, honour for M. Eugene 456
Week's Work, the ... 458
Welsh garden, notes from a 460
White fly, parasites for controlling the ... 455

ILLUSTRATIONS.

Capp, Mr. F. 456
Grammatocarpus volubilis 459
Heliophila linearifolia 461
Hydrangeas, Baron Schröder's Gold Medal exhibit of 457
Lancetilla Experiment Station, plants at 462, 463, 465
Phlox Camla 460

SUPPLEMENT PLATE.

Lewisia Howellii.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61·4°.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, June 19, 10 a.m. (Greenwich time). Bar. 30·3. Temp. 72°. Weather, warm and fine.

Heterosis.

THE phenomenon of inheritance now distinguished by this title includes, incidentally, one of the most fundamental in the whole range of biology—the survival value of sex in the scheme of Nature. Why has the commingling of the tissues of two separate individuals become—apparently—the highest expression of evolutionary endeavour? It would seem that Nature experimented. In the beginning the asexual method of reproduction was tried; and still persists—very effectively too—in the lower organisms. Next, sex appears in the hermaphrodite form, first, absolute within one individual, and then, modified so as to effect the bringing of another individual into the reproductive effort. Then, the sexual differentiation takes the shape of two distinctively fashioned individuals. Finally, crowning the whole edifice we have, in man, an implanted aversion to the consanguineous union. Before the days of Mendel, Darwin was content with a mediaeval conception. "Nature abhors self-fertilisation," he said, and proved the "law" for plants in his book *The Effects of Cross and Self Fertilisation in the Vegetable Kingdom.* But with the emergence of the science of Genetics, based as it is on the extension of Mendel's unit character hypothesis to include practically all the phenomena of heredity, including even the inheritance of sex, Darwin's "law" provides no explanation; no more than its prototype—"Nature abhors a vacuum"—explained the rising of water in the pump! We venture to think that neither heterosis, nor its cognate—loss of vigour on "selfing" (inbreeding in animals)—has, hitherto found a complete Mendelian explanation. The eminent Abbot and his successors have, no doubt, established, with an almost wearisome iteration, that the three to one ratio holds in the case of "qualitative" characters within a species group. But in the case of "quantitative" characters the proof is by no means so complete. The best that can be stated appears to be that the inheritance of such characters as physical dimensions, etc., has the appearance of being regulated by segregating factors; provided, always, that a multitude of additive allelomorphs of the same nature is postulated. But statistical confirmation is wanting, for, as Johannsen originally showed, environmental "fluctuations" in a family cannot be disentangled from the genetic mutations supposedly caused by segregation of allelomorphs. And, further, the chromosome hypothesis necessitates great economy in the number of segregating units. Again, as both Punnett and Engledow have demonstrated, parental dimensions have a puzzling way of disappearing from the F_2 descendants. However the theory stands, the crude fact remains that the scientific breeder, so far, has failed to control quantitative characters in the manner that has so often distinguished his practical successes with qualitative units. The failure is doubly unfortunate from the practical standpoint, for it is the former that are most important economically; yield and vigour of plants; amount of milk and flesh in cattle; and egg production in poultry, are examples of characters in which the practical man is interested and in regard to all of these scientific work has not, so far, given any results. The loss of vigour that so often follows the first step in scientific plant breeding—selfing the F_1—alone constitutes a formidable obstacle well illustrated by what followed when the geneticists in the U.S.A. attempted to breed an improved Maize plant. The pure line plants produced by continuous selfing are puny; although recessive defects have been bred out, the pure plant is useless commercially. When, however, two pure lines are crossed, heterosis comes into play. The heterozygous F_1 is even more vigorous than the existing commercial strains. It should be explained that, normally, the Maize of the farm is wind-pollenated and heterozygous to a degree. Unless, then, the farmer (who usually grows his own seeds), by taking rigorous precautions keeps two pure lines going, and grows them side by side the year before he requires seeds (an "unpractical" proposition), genetical science is of little use to him. The theory relating to heterosis most in favour at the present time is that vigour is the result of a number of dominant factors and that the excess vigour of the F_1 between two pure lines is due to the meeting in one individual of a greater number of such dominants than are present in either parent. The weakness of this theory, however, is that if it be correct, then it should be possible to fix vigour by breeding a pure dominant; but so far, a plant containing dominants in the homozygous form has not been found. If the dominants, moreover, are linked, as they might conceivably be, the chances (statistically) against the occurrence of such an individual are so great that an endeavour to get one is, practically, not worth making. The fact, therefore, seems to be that, so far as theory is concerned, we can do little more than modernise Darwin's dogma, and state that "Nature abhors homozygotes," recognising, at the same time, that man may, with advantage, disregard the teachings of Nature by keeping alive the self-pollenated cereals and in stock-breeding, practise inbreeding as one of the best methods of purifying and fixing improved breeds of domesticated animals! These observations have been prompted by a paper* that has just appeared in the leading American journal concerned with Genetics. In this paper heterosis is treated as one of the factors which determine the stability of a species under evolutionary stress and the straight assumption is made that the phenomenon accompanies heterozygousness without any attempt being made to evaluate it in terms of Mendelian factors. Incidentally, it is unfortunate that research on heterosis and its cognate inbreeding seems to be almost exclusively confined to the U.S.A. The subject attracts comparatively little attention here, although, as we have attempted to show, the want of a solution is likely to be a serious hindrance to the progress of genetic science in its economic aspects.

Our Supplement Plate.—The Lewisias rank among the choicest of the alpine garden plants which America has given us, and among them, L. Howellii, an illustration of which we have pleasure in presenting as a Supplement Plate to our present issue, is outstanding, being by no means difficult to grow and very free-flowering when afforded congenial conditions. The Lewisias are sun-loving plants and do best when grown in sunny crevices between rocks, in perfectly-drained, gritty loam, and with an abundance of soil-moisture during the summer months; during the winter it is advisable to protect them with a pane of glass placed overhead. L. Howellii forms an attractive rosette of fleshy, narrow, oblong leaves, which are crinkled at the margins, and produces, during late May and June, several sprays of beautiful star-like flowers, pink in colour, striped with buff.

Roses from the Royal Gardens.—It is the practice of Her Majesty the Queen, each Alexandra Day, to send Roses from the Royal Gardens at Windsor to Christie's, where they are sold by auction in aid of the Queen Alexandra Fund. This year the two bouquets of Roses sent realised £2,098; the blooms were sold singly, the bids ranging from two guineas to £100 for each flower. During the last eight years these sales of Roses at Christie's have realised not far short of £20,000.

Parasites for Controlling the White Fly.—Notices have appeared drawing attention to the distribution of white fly parasites by the Experimental and Research Station, Cheshunt, acting under the auspices of the Empire Marketing Board. Glasshouse owners have been asked to write for particulars to the entomologist of the above Station, but this is undesirable, because it multiplies the work. All that is necessary is for the owners of glasshouses infested with white fly, to state the number of glasshouses attacked. Consignments will be sent by return, so long as the supplies are available. The parasite is a Chalcid Wasp which lays its eggs within and destroys the young stages, known as "scales" of the greenhouse white fly. The parasite itself is entirely harmless to plants, and depends upon the white fly for its existence.

Jones-Bateman Cup for Research in Fruit-growing.—In 1920, Miss L. Jones-Bateman of Cae Glass, Abergele, presented to the Royal Horticultural Society a valuable Silver-gilt replica of the Warwick Vase, to be used for the encouragement of fruit production. It is accordingly decided to offer it triennially for researches in the growing of hardy fruits, Figs, Grapes and Peaches, in the open or under glass, and it is available for award in 1929. Candidates should submit accounts of their work by October 31. The work dealt with must have been carried out by the candidate in the United Kingdom mainly during the past five years. The Cup will be held for three years by the successful candidate, who must give a bond for its safe return, and when the Cup is relinquished the holder will receive a commemorative Gold Medal. The holder will be eligible to compete on the next or any succeeding occasion. The Assessors will be three, two appointed by the Royal Horticultural Society and one by the National Farmers' Unión, and they will report to the Council of the Royal Horticultural Society upon the originality and comparative potential value to the fruit-growing industry of the work of the candidates. The Council of the Royal Horticultural Society will award or withhold the Cup at its discretion.

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* "Genetic Equilibrium and Selection," by W. B. Kemp. *Genetics*, 14-1-85.

Lauriston Castle and Grounds.—In formally opening Lauriston Castle and grounds to the public on Thursday of last week, Lord Provost Sir Alex. Stevenson remarked that it was only in 1920 that Cramond was brought within the City of Edinburgh, and since then they had opened a public park of thirty-two acres; Lauriston Castle grounds, extending to thirty-three acres, and the adjoining Lauriston farm, which extended to 196 acres, had been purchased, so that the Town Council of Edinburgh were now responsible for no fewer than 260 acres of open spaces in the Cramond district.

Honour for M. Turbat.—We are pleased to learn that M. Eugène Turbat, the head of a famous Orleans nursery firm, and Secretary of the Fédération Horticole Professionelle Internationale, has been elected Mayor of Orleans. We heartily congratulate M. Turbat on his well-merited civic honour.

Trials at Wisley.—The Royal Horticultural Society will conduct trials of autumn-sown Cabbages and Onions in its Gardens at Wisley during the coming season. Varieties for trial (one packet of each variety) should be sent to reach the Director, R.H.S. Gardens, Wisley, Ripley, Surrey, by July 15, 1929.

Horticultural Club Outing.—Arrangements have been made for the annual outing of the Horticultural Club, to take place on Friday, July 5. By the kindness of Messrs. J. Cheal and Sons, a visit will be paid to their nurseries at Crawley, and after lunch the party will proceed to Nymans, the residence of Lieut.-Col. Messel, to inspect his beautiful gardens. On arrival at Crawley, Messrs. Cheal will kindly provide refreshments, and lunch will be served at the George Hotel, Crawley. Lieut.-Col. Messel has kindly offered to provide an alfresco tea on the lawn at Nymans. The journey will be made by motor-coaches from Bush House, Aldwych, at 9.45 a.m., and the return journey will be made about 7 p.m. Applications for tickets, price 10s. 6d. each, should be made, not later than July 1, to the Hon. Secretary, Mr. George F. Tinley, 855, London Road, Westcliff-on-Sea, Essex.

Jealott's Hill Research Station.—The new Agricultural Research Station of Imperial Chemical Industries Limited, at Jealott's Hill, Warfield, Berks., will be formally opened by the Rt. Hon. J. H. Thomas, M.P. (Lord Privy Seal) on Friday, June 28, before a distinguished company. The new research station is stated to be the finest of its kind in the world. It comprises two farms, Jealott's Hill and Nuptown, the area of the former being 360 acres, of which 160 are under the plough; the latter consists of a grass holding of seventy-six acres. The estate is thirty miles from London on the south of the Thames, midway between Windsor and Wokingham. The Jealott's Hill Station is the new research headquarters of Nitram Limited, the distributive and research organisation for the farm fertilisers side of Imperial Chemical Industries. It is equipped with magnificent laboratories for analytical work of all kinds, such as the examination of soil and fertilisers, and for research into such subjects as animal nutrition, biochemistry, botany, plant physiology, bacteriology, and general microbiology. At the laboratories there will be displayed both apparatus and equipment used for the investigation of soils, fertilisers, crops, etc., and also special demonstrations of some of the methods used in testing soils. There will also be a cinematograph display illustrating the intensive system of grassland management. After the opening ceremony, visitors will be able to inspect any of the many research activities of the station. The experiments themselves will be explained by special demonstrators.

Mr. F. Capp.—The Professional Gardeners' Association, which has now a membership of over two thousand, was started ten years ago, at Wakefield, by Mr. F. Capp, who for the past eleven years has been gardener at Nostell Priory, the residence of the Hon. Charles Winn. Saturday, June 1, was the seventieth anniversary of Mr. Capp's birthday, and the occasion was fittingly marked. Nearly two hundred members of the P.G.A. and their wives, from the Leeds, Harrogate, Huddersfield, Bradford and Halifax branches, met at Nostell, and began a pleasant programme by an inspection of the Priory Gardens (by permission of the Hon. Charles Winn). The weather was brilliantly fine.

MR. F. CAPP.

Mr. Capp conducted the visitors through the extensive and picturesquely situated gardens, where the visitors were especially interested in the sound practical arrangements designed with a view to providing continuous supplies of varied produce. The vineries, Peach-houses, Fig-house and Tomato-houses were much admired, and the Bananas aroused considerable interest. The outdoor attractions included a splendid Rose garden. In the course of the tour, the party traversed the beautifully wooded walks, amid the gold of the Laburnum, the white blossoms of the Thorns, and the glories of the Rhododendrons. At the conclusion of the tour of the gardens, the party set out for Wakefield, where a substantial repast was awaiting them at Webster's Café. At the conclusion of the meal, Mr. McCormack, of Harrogate, President of the Association, who was supported by Mr. George Reid, of Gomersal, Secretary, and members of the Committee, wished Mr. Capp many happy returns of the day. In responding, Mr Capp said this was one of the proudest days of his life; ten years ago, he started the Professional Gardeners' Association, at Wakefield, and since then it had grown wonderfully; it had headquarters at Leeds and branches in various parts of the country. Later, the company were entertained by Mr. Capp. The President spoke in high praise of Mr. Capp's devotion to the welfare of the Association, and said they all valued his attendance and counsel at the meetings of the Committee. To celebrate this auspicious occasion, Mr. Capp had been made an honorary life member, and they desired to present him with a gold badge as a memento of the event, and a token of the respect and admiration of the members of the Professional Gardeners' Association. The inscription on the gold badge states that it was presented to Mr. Capp on his election as honorary life member and to celebrate his seventieth birthday. A vote of thanks to the Hon. Charles Winn for throwing open his gardens to the visitors, and to Mr. Capp for showing them round, was proposed by Mr. Micklethwaite (Huddersfield), seconded by Mr. Kelk (Bradford), and supported by Mr. Fletcher (Wakefield). Mr. Capp commenced his gardening career under his father, and afterwards served at Elsham House, Grantham; Clumber, Worksop; High Ashurst, Dorking; Plawhatch, East Grinstead; Hall Place, Maidenhead; and Oak Dene, Holmhurst, Dorking; and eventually had charge of the gardens at Newport House, Eardisley; Wexham Park, Slough; Paddockhurst, Crawley; Paddington Manor, Winchcombe; Colney Hall, Norwich; and Charters, Ascot, before becoming gardener to the Hon. Charles Winn, at Nostell Priory.

Holland House Gardens.—The Gardens of Holland House, Kensington, will be opened to the public, by kind permission of Mary, Countess of Ilchester, from 2 p.m. to 8 p.m. on Saturdays, June 29 and July 6 and 13, in aid of the West London Hospital and the Crippled Boys' Home. The charge for admission will be 1s.

Handbook of Manchester Parks and Recreation Grounds.—Public interest in the parks and recreation grounds of Manchester is fostered by the City Corporation and, to further this interest, the Parks and Cemeteries Committee has recently issued a second edition of the excellently illustrated *Handbook of the City Parks and Recreation Grounds*, by W. W. Pettigrew, V.M.H., the General Superintendent, in which the numerous open spaces are described, and much interesting data given concerning their purposes and special activities. The work commences with a brief outline of the history of the Manchester Parks; Philips Park and Queen's Park, in Manchester, and Peel Park, in Salford, were purchased by public subscription in 1845; the two former parks were presented to the municipality in the same year, suitably laid laid out at the expense of the subscribers, and formally opened to the public the following year. Only two open spaces—Ardwick Green and Alexandra Park (1868)—were secured during the next twenty-five years, but by 1895 the number had increased to twenty-three, although, as many of these were only small areas, the total acreage only amounted to 403 acres. It was in the next quarter-of-a-century—from 1895 to 1920—that the greatest progress in providing pleasure grounds and open spaces in Manchester was made, for we read that during this period the number of open spaces increased to seventy-six, the greatest acquisition being Heaton Park, Manchester's largest pleasure ground. During this period also, Platt Fields (ninety acres), Broadhurst Playing Fields (eighty-four acres), Cringle Fields (fifty-four acres), Brookdale Park (forty-three acres) and Debdale Park (forty acres) were added. Since 1920 two more parks have been opened to the public—Fog Lane Park (forty-eight acres) and Chorlton Park (twenty-nine acres)—making the total area of open spaces in Manchester 1,654 acres; stated by Mr. Pettigrew to be 446 acres short of the ideal set up by modern experts and approved by the Manchester City Council. Mr. Pettigrew outlines the policy adopted by the Committee in the development of these parks and recreation grounds, which may be grouped into four distinct types:—(1) children's playgrounds, pure and simple; (2) playing fields, where the greater part of the area is devoted to the provision of the requirements of organised games—football, hockey, lacrosse and cricket; (3) described as district open spaces, and laid out with bowling greens, tennis courts and grassy spaces where children can play, and (4) pleasure grounds, which embrace the largest parks. The development of games and sports in the Manchester parks, and the present curriculum, are dealt with in detail, as also are the "Children's Playgrounds," and organised visits of children to the parks; in fact, the full facilities and activities of Manchester parks and open spaces are reviewed with from A to Z in this excellent publication, the second half of which is devoted to detailed descriptions of the individual public parks. The *Handbook* is excellently illustrated throughout, and extremely well printed. We recommend it not only to the inhabitants of Manchester and the surrounding districts, and to those who may visit Manchester and be desirous of inspecting its lovely parks, but to Park Superintendents and others associated with the maintenance of parks throughout the United Kingdom, to whom it would convey many useful hints and much valuable information. It should be of special value to the Park Superintendents who will be visiting Manchester on the occasion of the Parks Superintendents Conference. The *Handbook* may be obtained from the General Superintendent, 38-40, Lloyd Street, Manchester, or from any of the head gardeners at the principal parks, price 6d. each.

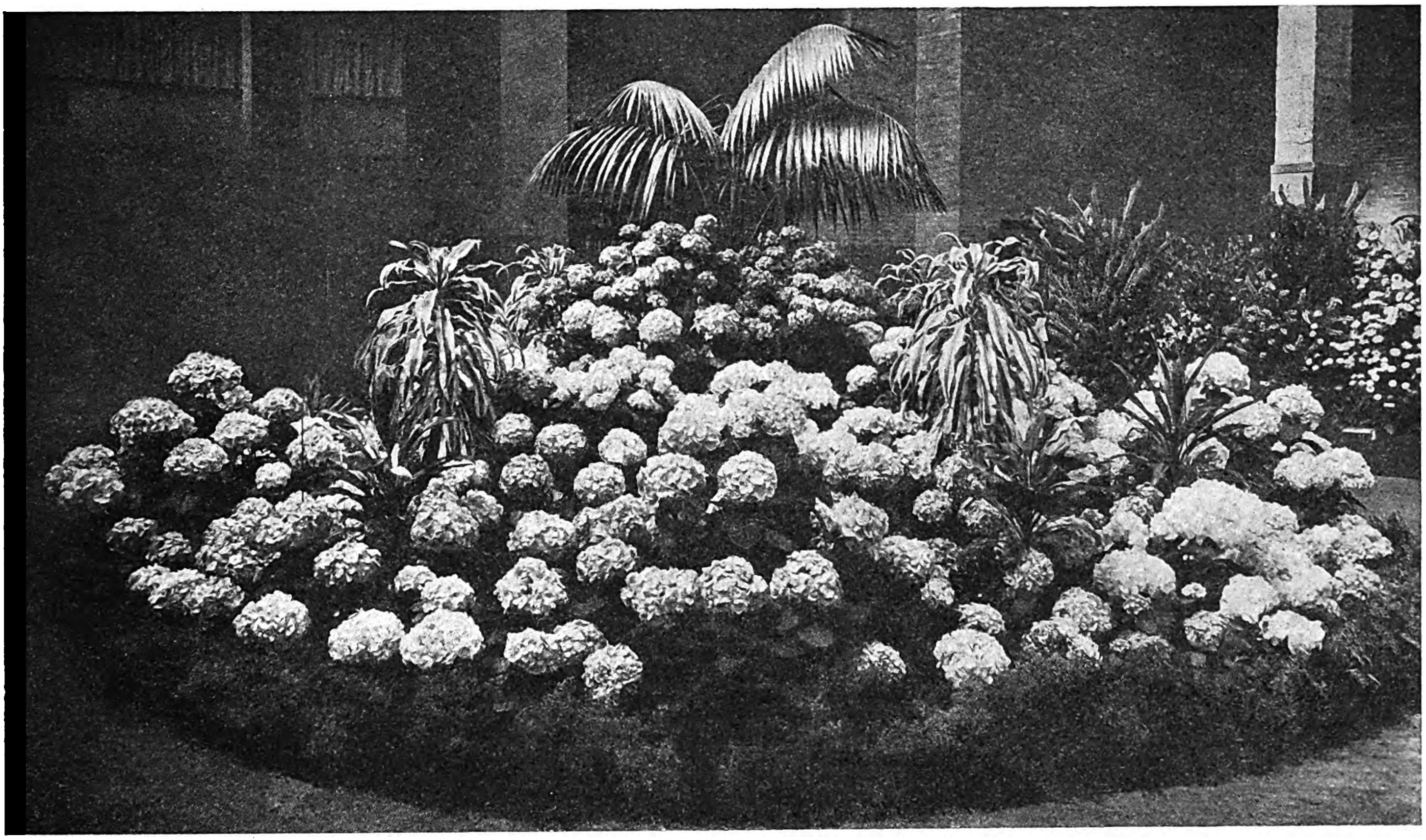

FIG. 230.—GOLD MEDAL GROUP OF HYDRANGEAS EXHIBITED BY BARON BRUNO SCHRÖDER (GR. MR. E. T. HENDERSON), AT THE R.H.S. MEETING OF JUNE 11.

(see p. 453.)

The National Sweet Pea Society.—During the next few weeks this special-flower Society has a full programme of events. The Floral Committee will meet at Birdbrook, Halstead, Essex, where Messrs. Robert Bolton and Son are growing the trials of new Sweet Peas, on Tuesday, June 25, and the annual outing of members to inspect the trials is fixed for the following day. Members from the south will leave Liverpool Street Station by the 10.3 a.m. train for Birdbrook, where they will be entertained to lunch by the kind invitation of Messrs. Robert Bolton and Son. This year the Society has an unusually large number of novelties at the trials, and in addition to these, Messrs. Robert Bolton and Son are growing all the Classification varieties and those especially recommended for garden decoration. In another part of their grounds, Messrs. Robert Bolton and Son have several hundreds of their own novelties which will also be open to inspection by members of the National Sweet Pea Society. The Annual Show will be held in the new Horticultural Hall, Westminster, on July 2 and 3. There will be an official lunch for members and their friends in the restaurant at 12.45 p.m. on July 2. The cost of tickets is 3s. 6d. each, exclusive of wines. The following week there is to be the Provincial Show of the Society in conjunction with the centenary of the Norfolk and Norwich Horticultural Society at Norwich, on July 11 and 12. The headquarters of the Society, during the period of the show, will be at the Royal Hotel, Norwich.

Appointments for the Ensuing Week.—TUESDAY, JUNE 25: Royal Horticultural Society's Committees meet (two days); Royal West Renfrewshire Horticultural Society's meeting. WEDNESDAY, JUNE 26: Lincolnshire Agricultural Society's Exhibition (three days); Wadhurst Gardening Association's Rose and Sweet Pea Show. FRIDAY, JUNE 28: Streatham Rose and Sweet Pea Society's Exhibition. SATURDAY, JUNE 29: Belgian National Sweet Pea Society's Exhibition (Brussels, three days); Leeds Paxton Society's lecture; Worcester Park Horticultural Society's Show; Wallington and District Horticultural Society's Exhibition; Romsey and District Gardeners' Association's Exhibition.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Cheltenham Horticultural Exhibition.*—It is a source of gratification to observe the yearly improvement in the management and success of provincial horticultural exhibitions. A few years since they were almost invariably got up and managed by interested parties, *i.e.*, by proposing exhibitors, whose object was not the advancement of horticulture, and the collateral arts and sciences connected with it, but to so arrange the prize and censor lists as to ensure to themselves the lion's share of the awards. As a natural consequence of such injudicious management, societies of the kind have always proved very ephemeral; and considering the little good and the large amount of bad feeling they engendered, such a result was little to be regretted. In some few instances, however, a different end has been aimed at. Perhaps no provincial exhibitions have equalled (certainly none have surpassed) those of Cheltenham. Not contented with throwing them open to the United Kingdom, they have opened them to all the world; and, by offering liberal prizes, encourage competition, and make it worth while for first-rate growers to bring their productions from a distance. An exhibition took place at Cheltenham on Tuesday and Wednesday last, which would have done no discredit to London. The stove and greenhouse plants were numerous and fine; Heaths good; Orchids choice, healthy, well-grown, and in respectable quantity; and of plants with ornamental foliage there was quite a legion. The only drawback was in the Pelargoniums, which, though abundant in quantity, were, with one or two exceptions, very poor and ill-grown. On the first day, the plants were exhibited in the usual way, classed according to their kinds; but, on the second, a new feature was tried, which was evidently a step in the right direction. The plants were all rearranged, each exhibitor's in one great mass by themselves. Prizes were offered in five classes, and the exhibitors had the option of showing their plants in any one of the classes they pleased. The appearance of some of the groups, which were tastefully arranged, was very good; and we observed some very happy effects produced by combinations of Orchids with Pelargoniums, and the judicious admixture therewith of Ferns and other ornamental-leaved plants. The exhibition took place in the grounds of the old Wells, which, besides a very handsome and well-stored museum, contains, as an additional attraction for the season, a Crystal Palace on a small scale, containing a very nice little exposition of arts and manufactures. Altogether, a spirit quite up to the present day has been displayed by the inhabitants of Cheltenham. We recommend their doings as an example to other towns, and in their future trials heartily wish them success. *W. D. Gard. Chron., June 24,* 1854.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Anguloas.—As the strong-growing Anguloas, such as A. eburnea and A. Clowesii, are now passing out of flower, the plants will require some attention at the roots, while those plants which failed to produce flowers may be repotted as the new growth advances, for fresh roots are developed when the growth is a few inches high and any repotting is best done at that stage, *i.e.*, just when the new roots are pushing out at the base. These Orchids are robust growers and soon exhaust the compost; therefore the plants will require to be repotted at least every alternate year, while, if the pots used are on the small side, annual repotting will give good results. A suitable compost for them consists of equal parts A.1. fibre and good fibrous loam, with a few dried Oak or Beech leaves, well broken up, adding crushed crocks or charcoal to keep it open. Well-drained pots should be used, and some rough material from the compost should be placed in first to prevent the finer portions clogging the drainage. Pot moderately firmly, keeping the soil just below the rim of the pot with the base of the growth just in contact with it, not buried. After repotting, the plants will thrive well at the cool end of the intermediate house, and the pots and surroundings should be moistened by damping occasionally. Very little water will be needed at the roots until the growths and roots are advancing, but as the pseudo-bulbs begin to swell ample supplies will be needed each time the soil approaches dryness. When growth is complete the water supply should be reduced gradually, as very little will be required to keep the plants in a normal condition during the resting season. The foliage should be examined frequently for scale, red spider, etc., which, if found, should be removed by careful sponging. The later-flowering varieties of A. Ruckeri and A. uniflora should be afforded treatment similar to the above as they pass out of flower.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Chief Assistant Lecturer, Reading University Horticultural College.

Gathering Strawberries for Dessert.—The greatest care should be exercised when gathering these fruits for dessert, and only those that are well formed and ripe to the tip should be chosen. They should be detached with sufficient stalk to hold them by, and they should always be served with their own fresh foliage. I have found that the early afternoon is the best time to gather the fruits, for then the flavour and aroma are at their best. Fruits, however, that are to be sent some distance are best gathered in the early morning when sufficiently dry, as then the flesh is much more firm, and the flavour, to some extent, must be sacrificed. Strawberries for preserving purposes are generally "plugged" when being picked, but they are more quickly gathered with the calyces attached, and with the least amount of damage to the berries.

Apple and Pear Trees.—Trees that were top-grafted this spring should be examined, and where the scions are making growth, the wax should be removed, and the ligatures loosened so that the swelling of the stem may be unrestricted. Secure a small piece of cane to the stock and the graft to prevent injury from birds and wind. A few shoots from the stock may be allowed to remain until the growth of the scion is well advanced, and afterwards removed. Young stocks should also be examined, and the resulting growths from the scions secured to Bamboo canes. Young growths from last year's budded stocks are first secured to the four-inch piece of "snag" left when the stocks were headed down this spring, and later to Bamboo canes, every inducement to make clean growth being given. The summer pruning of all fruit trees on walls and fences should be proceeded with now, laying in any extension growths where needed. These extension growths should not be summer-pruned, and the same rule applies to the leader growths of bush or other trees.

Aphis and Scale.—These two pests attack the Cherry and Peach, the former causing the leaves to curl badly, and the latter sucking the sap and making the foliage filthy. Both may be got rid of by a soft soap and Nicotine spray. This spray should be applied in the evening and with some force, and is made up as follows: Dissolve 3 lbs. of soft soap by boiling, and pour into it 1 oz. of pure Nicotine, then add the mixture to ten gallons of water. In the event of a very bad infestation of scale the amount of water may be reduced to five gallons, but it is essential that this wash be applied in the late afternoon or evening, and that it is not applied to trees with fruits at the point of ripening. Nicotine, unlike arsenate of lead, does not remain for long as a poison on the fruits or foliage, but evaporates rapidly. To be quite safe, however, a period of ten days should elapse between the last spraying and the gathering of the ripe fruits.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Roses.—June is a busy month for the Rosarian, for close attention must be given to pests and diseases, and their immediate destruction. Although June is spoken of as the month of Roses, it is generally not until the end of the month or the beginning of July, that H.T. and T. Roses are at their best. This year, at the time of writing, they are later than usual. Aphides should be dealt with immediately they appear, in fact, if time can be found, the bushes may, with advantage, be sprayed, whether aphis is present or not, with an approved insecticide; prevention is always better than cure, and insecticides for such purposes are cheap. Mildew is a troublesome disease in some gardens, and if not checked soon disfigures the plants. Dusting with green sulphur when dew is on the foliage will keep it in check if done in time. Spraying with some of the approved mildew washes will have to be resorted to if the attack becomes really bad. On many soils growers are too lavish with nitrogenous manures, thereby creating soft growth and foliage that are more liable to attacks by fungus diseases; in such instances it is better to apply potash to the soil during autumn for, by doing so, foliage of a firmer texture is created, which is better able to resist attacks of disease. Constant use should be made of the Dutch hoe not only to keep the beds free of weeds, but to create a mulch of loose soil, which will conserve moisture. During the month disbudding should be attended to if good blooms are required. Remove the buds not required so early as possible, leaving two buds for a time on each growth in case one is damaged by caterpillars. During continuous drought it is advisable to water the beds well, and then loosen the surface of the soil with the hoe to conserve the moisture.

Rhododendrons and Azaleas.—Remove the flower heads of Rhododendrons and Azaleas to prevent them forming seed-pods; such a procedure makes a wonderful difference to the growth and flowering of young plants. Also inspect those grafted periodically in case dormant buds on the stocks begin to grow; these should be removed entirely, not merely cut over with a knife. Choice sorts may still be layered—a simple and sure method of propagation, although slow—for these subjects are always better on their own roots.

Lawns.—Lawns sown during early spring require a little special care at this season. If the grass is thin it should not be mown in the usual way, or the roots of the young plants will suffer from the effects of the hot sun. A useful practice is to mow such lawns with a side wheel mower without the grass box, leaving the short grass to act as a mulch. If too heavy, some of the grass may be removed the following morning, but if mowing is done at regular intervals, never allowing the grass to become long, it is seldom necessary to remove any of it unless dull, wet weather is experienced. It is important that the cutting knives and sole-plate of the machine are sharp and well set, otherwise damage may be done to the young plants.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

The Orchard House.—The fruits on early varieties of Peaches and Nectarines are now quite ripe, and if they have not been gathered, and later sorts are forward enough to allow the admittance of more fresh air, with lighter syringings, and a discontinuance of fire-heat, the fruits may remain on the trees. As early trees are cleared of their fruits they should be syringed well to clean them. As they have made their growth and still have the summer before them, the coolest and most airy part of the house will suit them for the present; later, they may be partly plunged out-of-doors where they may have plenty of light, air and water. Watering and syringing are most important; the roots should have full benefit of moisture through the night. Mulchings of fresh stable litter are as necessary as ever, and feeding with soot and liquid manure, not too strong, should be continued; watering and syringing in the evening gives the best results.

Later Houses.—Fruits have set well in these houses, and thinning to the number each tree is to ripen may be finished, as there is very little danger of fruits dropping on healthy trees in June. Ripe wood is the mainspring of success, and, assuming that the house has hot-water pipes running around it, the daily routine of syringing and ventilation must never be neglected. Pinching and disbudding may be done rather freely and the roots watered liberally. All fruit-bearing trees should be top-dressed with a compost of loam, bone-meal and decayed manure, and as the trees grow, the strongest shoots should be stopped at the fifth or sixth leaf, or longer, according to their vigour, and the space at command; the weak growths, especially those near the base of the trees, may not need pinching at all.

Cherries.—The ripe fruits of these should be protected from birds, and if required to hang some time, may be lightly shaded. Trees with ripe fruits should be kept fairly dry and cool, but the roots should not be allowed to get too dry, or cracking and shrivelling of the fruits of May Duke and other thin-skinned varieties may result when water is afforded. Biggareaus will withstand drought, but soon become unhealthy if allowed to suffer through lack of root moisture. Later trees should be well thinned, and any young growths kept closely pinched to three or four leaves.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Cyclamens.—Young Cyclamen plants, which were raised from seeds last autumn, should by this date be ready for placing in their flowering pots, the size of which will greatly depend on the strength of the plants under treatment. The largest and strongest plants require six-inch pots, but for the majority five-inch pots should be large enough. To be successful with Cyclamens good drainage is essential, for when in active growth the plants require copious supplies of water; where possible, rain water should be used. The compost may consist of two parts fibrous loam and one part leaf-mould, with the free addition of sharp sand, old red bricks broken up very finely, and bone-meal. Another point to remember is, be sure the young plants are kept free from aphis and thrips. Mild fumigations will clear the plants of the former but, if thrips have obtained a hold, it may be necessary to dip the plants in a safe and reliable insecticide. After potting, the plants should be grown near the roof-glass, preferably in a light span-roofed house, and shaded from bright sunshine. They may also be grown successfully in cold frames from now until the autumn, the lights being removed in the evening if heavy rains are not expected.

Azalea indica.—If a cool, shaded house is not available for these plants during the summer, a cool pit will suit them, and when their growth is completed they may be stood out-of-doors under a wall or hedge. During hot, dry spells, they should be syringed vigorously during the evening to keep thrips at bay, for these are very partial to this plant.

Primula malacoides.—This delightful plant is worthy of extensive cultivation under glass, as it ranks among the most useful of the Primulas for decorative purposes. Another point in its favour is that it requires to be grown under the coolest possible conditions, and is therefore suitable for amateurs who have a cool house from which frost may be just excluded. This Primula is very free-flowering and produces its flowers on stiff stems well above the foliage. Seeds sown now in a cool house will provide good plants for early spring flowering, the plants being grown on into four-and-a-half-inch pots, care being taken always not to over-water them.

Winter-flowering Pelargoniums.—Where Pelargoniums are grown to produce a display of flowers during the winter months, the plants should now be ready for their final potting. After this operation they should be placed in a sunny position. Water should be given sparingly until the pots are full of roots, and even then it is far better to keep the roots on the dry side, to prevent sappy growth.

THE KITCHEN GARDEN.

By W. G. Staward, Gardener to Lady Margaret Ryder, Knowle Gardens, Dunster, Somerset.

Celeriac.—Plants that were pricked out some time ago will now be ready for planting out. Select a fairly moist position for them, and place them fifteen inches apart in rows twenty inches apart.

Winter Greens.—Seedling plants of the various Brassicas for winter use should now be ready for transplanting in their permanent beds:—Dwarf Savoys, for early autumn; Drumhead Savoys, for late cutting; and Drumhead Cabbages and the old favourite Winningstadt Cabbage for standing through the winter. If planted now they will have time to develop into good specimens by the time cold and inclement weather arrives. Another batch of Brussels Sprouts should be planted to provide a succession to those planted earlier.

Peas.—These are now growing rapidly and should have supports provided so soon as they are of sufficient height. Those that have been staked already and are growing freely, sometimes fall away from the supports, therefore they should be gone over occasionally and any loose growth tied in with Raffia. During dry weather a soaking with water every week should benefit them greatly, while the ground between the rows may be mulched.

Maize.—As growth advances, each Maize plant should be staked separately, as the plants are very liable to be broken down by the wind. Good stout stakes, five or six feet high, should be used, and the plants tied securely to them. During dry weather, give them ample supplies of water at the roots.

Tomatos.—Finish planting out Tomatos so soon as possible, staking the plants at once, and when they are established, attend constantly to the removal of side growths.

Leeks.—So soon as these are large enough, plant them out into ground that has been well dug and manured. Allow eighteen inches between the lines and nine inches from plant to plant, and after planting, water them well to settle the soil about their roots.

FOR NORTHERN GARDENERS.

By John Hill, Gardener to Andrew Arthur, Esq., Rosemont, Monkton, Ayrshire.

Celery.—The maincrop Celery plants should now be ready for planting out, and, if showery weather prevails, no time should be lost in planting. As previously stated, the plants should be separated with a large knife a few days before planting, to reduce the check in lifting. On heavy soil the trenches should be shallow, but on light soils, deep trenches give the best results. In either case, a good dressing of old manure should be dug into the bottom of the trench and the whole well trodden. Single, double or even treble line trenches may be made, but the first is preferable for ease in earthing up. If large quantities of Celery are wanted early in autumn, the variety White Plume, if planted closely together on the level on well manured land, blanches quite satisfactorily without earthing up, but it should be used before the approach of frosty weather. After planting, tread the soil firmly about the plants, and water them well.

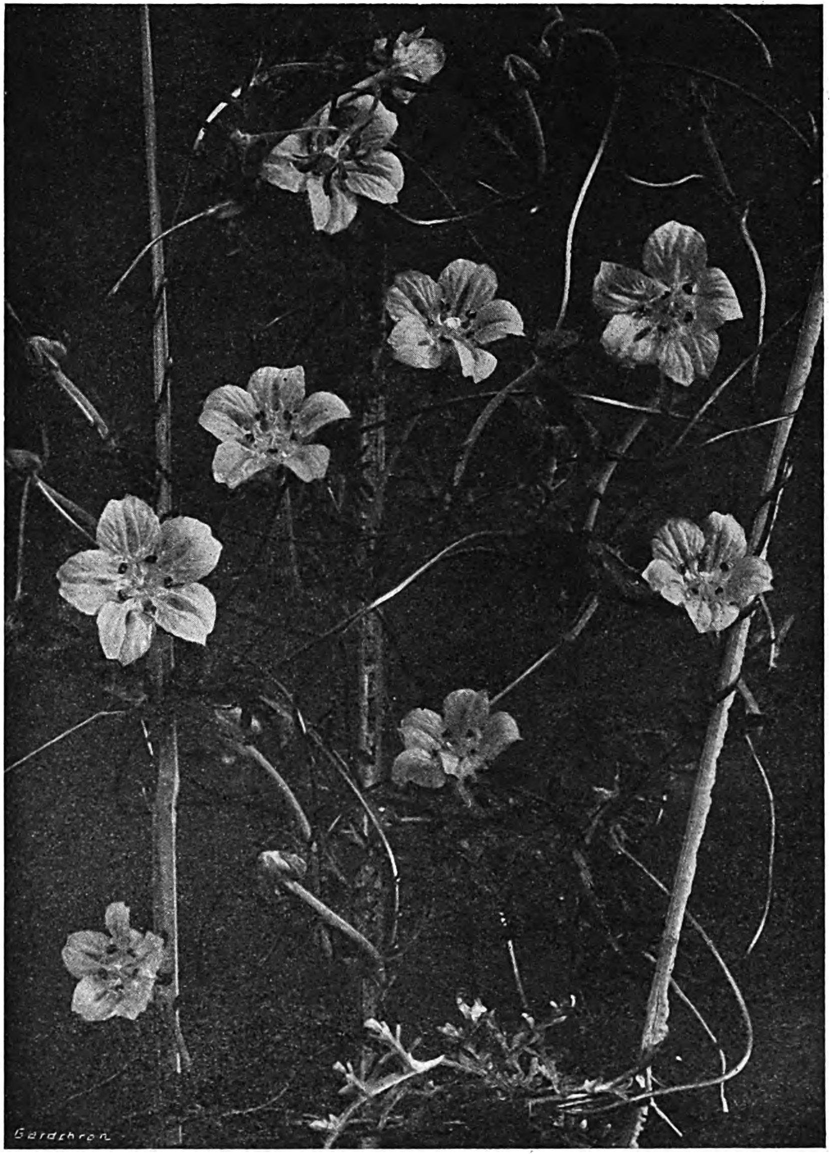

FIG. 231.—GRAMMATOCARPUS VOLUBILIS (SYN. SCYPHANTHUS ELEGANS).

R.H.S. Award of Merit, June 11. Flowers yellow. Shown by Major S. F. Harrison (gr. Mr. A. S. Hartless), Kings Walden Bury. (see p. 452.)

Asparagus.—The cutting from permanent beds should now cease, and the production of new growths encouraged by surface feeding and watering, so that the roots may have time to store up energy for next year's supply. As the stems lengthen, supply stakes and ropes for support before they get broken by wind and rain. Any blanks which occur in beds planted out recently should be filled up at once, and the ground frequently stirred either with the Dutch hoe or the cultivator. Brussels Sprouts which were planted in May should be hoed and then earthed up well, so as to provide support to the stems. French Beans may still be sown in a warm border from which an early crop has been cleared. Turnips, Carrots and Spinach should be sown frequently.

Roses.—Where Roses are subject to attacks of mildew they should be sprayed at intervals of a week or two with lime-sulphur. Stir the soil about them frequently and after the first crop of flowers, give a good dressing of dried blood or a good compound manure, and hoe it into the surface. To secure good flowers disbudding should be carried out regularly.

Chrysanthemums.—These, whether in pots or planted out-of-doors in beds, should be gone over now and again and have all unwanted growths removed, so as to strengthen those to be retained. Attend to staking, tying, watering and cultivating. Should leaf-miner appear, regular sprayings with Quassia extract usually keeps it in check, but it is important to wet the undersides of the leaves. The grubs can easily be killed by squeezing them between the finger and thumb so soon as detected. All biennials and perennials sown in May should be pricked out on well prepared ground in the open, allowing them sufficient space for full development.

NOTES FROM A WELSH GARDEN.

The passing spring has been notable for an abundance of blossom such as we have rarely seen before. If the severe winter is to be thanked for this, it is some consolation to feel that that season of evil memory did not confine its activities only to the debit side. Not only have subjects which usually give an average crop of bloom done well, but those which, as a rule, only flower feebly—or not at all—have been most satisfactory. Among the latter is Cytisus supranubius. This beautiful shrub managed to survive the frost unharmed, and it is now bearing quantities of its rosy buds and white flowers which scent the garden like a Bean-field. Leucopogon Fraseri, a dense, little, New Zealand, Ericaceous shrub, also escaped injury. Most of its nearer allies (Cyathodes) were killed, but its gloomy mound of dark spiny foliage has been brightened with tubular, ivory-white, honey-scented flowers for several winters. Vaccinium Mortinia is clustered with shell-pink bells which we do not often see here, and Leucothoe Davisiae, its pure white, erect racemes in striking contrast with the deep green foliage, is another of the shy flowerers which have done something for a shaky reputation. Many of the Gaultherias were reduced to a sorry condition by the frost, but G. Hookeri and the closely allied G. Veitchiana are flowering with vigour, and the more lowly G. perplexa and G. pyroloides promising a full crop of fruits.

Fragrance has been as generous as blossom, and a shrub like Lonicera syringantha, so often mediocre, has given us both with such liberality that for nearly two months it has been one of the most delightful objects in the garden. Growing in very poor soil, it has not exceeded five feet, but with every arching wand clustered with pale lavender, sweetly-scented blossoms, this shrub has excited the warmest admiration. The much smaller L. pyrenaica, although my specimen is only one foot tall, has also been flowering freely among other dwarf rock shrubs. Its pendulous trumpets, rosy-tinted white, are fully an inch long and half as wide, and very fragrant, Writing of fragrance, that of Clematis montana is not often mentioned, but throughout last month one of the most powerful scents in the garden emanated from a large mass of C. m. var. rubens. The countless blossoms of this fine plant gave forth a rich, musky aroma which at times was almost overpowering. A Philadelphus labelled P. Delavayi, and perhaps not typical, was the first of its race to flower, the clusters of bowl-shaped, white flowers having a more refined odour than that of many others of its race. A distinctive feature of this plant is the soft dove-grey with which the calyces and flower stalks are veneered. Among the best shrubby Spiraeas of later May is S. trilobata, an elegant bush of some four feet, the slender, arching branches bearing erect umbels of creamy-white blooms. In my modest collection of these subjects S. trilobata comes in after the earlier spring-flowering kinds and before S. bracteata. The latter, whose flowering season continues through early June, is such a handsome species and it stands out so distinctly among all others of its class, that one wonders why it is so seldom seen.

An interesting plant near the water is an American Liliaceous species, Chamaelirium luteum, which raises above a tuft of glabrous, spoon-shaped leaves numerous of one-foot flowering stems, each terminating in a dense spike of creamy-white blossoms. A nine-inch Globe-flower, labelled Trollius pumilus, Wargrave variety, is also a striking object, its small, finely-cut leaves being almost hidden beneath a blaze of golden-yellow blossoms whose sepals are reflexed. A hearty clump of Mimulus Lewisii var. alba is sustaining its reputation as one of the best of the less vigorous varieties, and it is pleasant to be able to record that the new Mimulus "Sunset," with scarlet flowers, came through the winter not less successfully than its parent M. Bartonianus. The delicate refinement of Primula flexilipes and P. chrysopa, the one with nodding bells of a moonlight pallor, the other bearing heads of soft lavender-blue, yellow-eyed blooms, will not be passed unobserved by lovers of good Primulas. Even although they flower at a season when they have to contend with so many of the big guns of their exalted race, these two, and I may add, the rich violet form of P. microdonta var. alpicola, should make a strong appeal to all who appreciate dwarf Primulas of easy culture. In contrast to the pale luminous yellow of P. sikkimensis is the sombre velvety-crimson of P. euprepes. The sweet-scented flowers of this weird species, in drooping, one-sided clusters on a two-foot stem, have narrow segments which are reflexed like those of a Cyclamen.

Meconopsis Baileyi is admittedly a difficult plant to place, its intensely vivid, kingfisher-blue striking so extraneous a note that it flings defiance at every other colour within range. But a group canopied by a thicket of Pyrus arbutifolia, whose corymbs of white flowers cast a silvery light, is the most pleasing of several efforts to accommodate this fine Poppywort. M. quintuplinervia, on the other hand, blends so sympathetically with the general run of semi-woodland subjects that a drift of its lavender flowers, several hundreds of them, has been surprisingly lovely for fully six weeks. Its gentle-toned, silver-lined bells have had for company Osmundas and other hardy Ferns, the orange Meconopsis cambrica, the starry flights of Saxifraga rotundifolia, some of the Sikkimensis Primulas, white and yellow Ranculuses and Stylophorum Franchetianum.

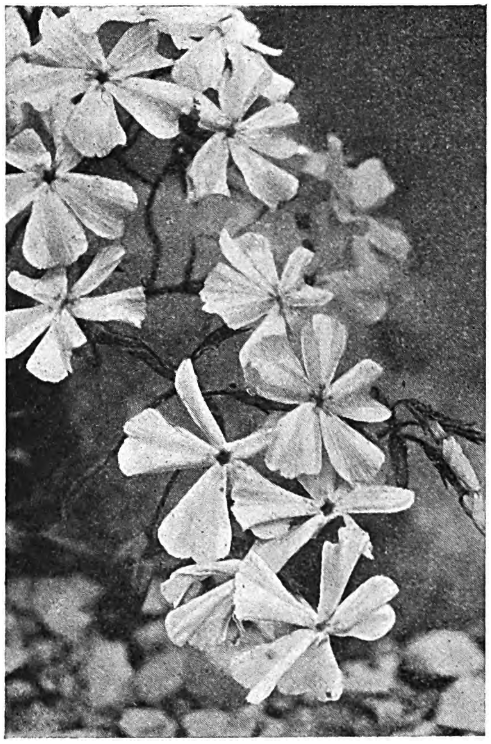

FIG. 232.—PHLOX CAMLA.

Always attractive and reliable, the Californian Irises are this year better than ever. Wonderfully free-flowering and affording a wide range of charming colours, these Irises thoroughly deserve to be better known. Nothing is more easily raised from seeds, the plants are slug-proof and hardy, and they carry on indefinitely in light, dry, stony soil, with full sun, only asking to be left undisturbed. The delightful I. gracilipes is also very willing here under similar conditions, but both this and its larger counterpart, I. tectorum, are so preyed upon by slugs that these pests are probably often the cause of failure with both species. The hardy form of I. japonica known as Ledger's variety is another Iris that will hold its own, even in June. Its sprays of flowers are singularly beautiful in their chintzy blending of blue, yellow and white, against the dark, glossy green leaves. I. chrysographes I have often been inclined to dispense with, since its lusty sheaf of "grass" has so often been out of proportion to the few and comparatively small flowers. But this year it has achieved wonders, its masses of rich violet, golden-veined blossoms which almost reach the tips of the slender leaves being really delightful.

Since it has become well-established in grass there is no more cheerful herb among the lesser woodland dwellers than Trientalis europaea, whose pearl-white, diamond-pointed stars have an elfin daintiness of irresistible sweetness. Mitella diphylla is another sylvan nymph attractive enough to make one wish to secure others of its genus. Here also is the chaste little Maianthemum Convallaria sharing a cool corner with the curious sea-green foliage of Jeffersonia diphylla, whose ephemeral blossoms are of earlier days; and again do covetous thoughts lean to a still more strangely beautiful species, J. dubia. Then what but eulogy can be expressed of that pleasant Japanese bantling, Tanakea radicans, which will shortly be waving above its little mat of heart-shaped leaves and thread-like runners six-inch plumes suggesting some tiny Astilbe. Nor will Vancouveria hexandra escape admiration, for it excels in the beauty of its foliage even among Epimediums, and its airy candelabra of waxen blossoms are the last word in delicacy and grace.

To conclude with a mention of a few oddments worthy of note and mainly among rock plants, an old clump of Lewisia Howellii has been a wonderful object for the past month, nearly 150 blossoms being counted at one time. Lithospermum Gastonii came through last winter and is flowering well, and both L. graminifolium and L. intermedium have made a splendid recovery after cutting back their frosted branches. Allium Ostrowskyanum and the rather later A. pedemontanum are among the most attractive of the dwarf species in pink, and if A. sibiricum cannot attempt to rival the above, it at least shows us what our own Cornish cliffs can do in the Onion breed. The pretty A. triquetrum, naturalised (if not indigenous) in parts of southern England, was nearly all destroyed just when it was in a fair way of over-running the whole garden. But a few of its graceful white-belled spikes appeared in time to join the exquisite Hyacinthus amethystinus. Aquilegia suaveolens, with a face of cherubic innocence and such a fox-like smell that its specific name must have been "writ sarcastic," has adorned a rock garden ledge for the past month. The true Phlox stolonifera, in a cool place, is a lovely plant not often seen, but always distinguished by its downiness, ramifying, thread-like runners and rose-carmine flowers on erect six-inch stems. But of all the dwarf Phloxes grown here none has won such unqualified admiration as P. Camla (Fig. 232), a recent creation of that magician among gardeners, Mr. F. W. Millard. There is something of the warm salmon-rose of P. Vivid in the flowers of this excellent novelty. But the large blooms, some being just over one-and-a-half inch across, are an even clearer, more appealing shade of that colour. An iris of fretted chevrons of carmine and a satiny texture add a touch of rare refinement and quality to the delicately-fluted, wedge-shaped segments of the corolla. The leaves are small, narrow and crisp, the stems red and in height no more than six inches. My plants proved quite hardy last winter, and they have carried an immense crop of bloom throughout May and early June. *A. T. Johnson, Ro Wen, Conway, N. Wales.*

TREES AND SHRUBS.

ELAEAGNUS MULTIFLORUS.

Among the shrubs which are specially suitable for planting in coastal regions, Elaeagnus multiflorus (syn. E. longipes) ranks high, but it is not only as a subject for seaside planting that this shrub deserves recognition, for it is of sufficient charm to merit growing in any garden where space can be found for it.

E. multiflorus is a deciduous, or, in the milder districts, semi-evergreen shrub, very attractive in foliage, which imparts to the whole a silvery appearance, and also effective when in fruit, and although the flowers are not striking, they in no way detract from the good appearance of the shrub, and are delightfully fragrant.

It is a native of Japan and China, and was introduced to this country about the year 1862, being now fairly extensively grown. It is one of the hardiest members of this popular and varied genus, several species of which are frequently grown on account of their foliage, especially the evergreen ones. It passed through the last winter practically unscathed, and is now (early June) flowering freely, the wealth of flowers giving promise of an abundant crop of fruits, for which this plant is grown in Japan, as they are edible and, although acid to the taste are not unpleasant to some palates; certainly birds are fond of them and devour them greedily so soon as they approach ripeness.

E. multiflorus flourishes in exposed and sunny positions, in fairly light soil, and forms a rounded bush up to ten feet or more high and as much across, its young growths being covered with reddish-brown scales; in fact, the whole plant is more or less scaly. The growths are clothed with slender leaves, ovate or obovate in shape and tapering at both ends, the upper surface being green and the lower silvery and covered with tiny scales. The flowers appear with the new shoots, being produced in the leaf axils, either singly or in small clusters; they are apetalous, that is, devoid of petals, and, apart from their fragrance, are not attractive. The fruits, however, which hang on slender stems, impart to the shrub a handsome appearance during July, for they are usually produced abundantly; they are about half-an-inch long, oblong in outline, and rich, deep brownish-orange in colour.

VIBURNUM TOMENTOSUM VAR. MARIESII.

THE Viburnums in general are flowering freely this season, but none, in my experience, with such abandon as this variety of the Japanese Viburnum tomentosum, its spreading branches being wreathed with inflorescences, from the base to the crown of the bush.

V. tomentosum var. Mariesii is undoubtedly very charming, indeed, very striking, when in flower, its beauty being enhanced by the fresh, bright green foliage. The broad clusters of flowers are borne on two-inch stems which rise erectly along the whole length of almost every branch, the large and creamy-white, sterile flowers of the cluster surrounding a central mass of small, cream-coloured, perfect flowers. In contrast to the erect inflorescences, the leaves droop on either side of the branch, so that the general effect is very charming, additional colour being furnished by the reddish petioles of the foliage.

This variety, like the better-known and, perhaps, even more beautiful variety plicatum, is hardier than the type, and superior to it, and is worthy of note as an extremely attractive early June-flowering shrub. *M. W.*

ALPINE GARDEN.

CORONILLA CAPPADOCICA.

SOMETIMES called Coronilla iberica, this beautiful hardy perennial, a native of Asia Minor, is a member of the Natural Order Leguminosae, and flowers in June and July. Being of prostrate habit and profuse in flowering, it is an admirable subject for the rock garden, for it thrives in ordinary soil, and delights in a sunny position.

The large flowers, yellow in colour and typical of the Order to which they belong, are borne in umbels, as the name cappadocica, or "crown" suggests. Each umbel is composed of seven or eight flowers, and attains a height of approximately six inches from the ground. The green leaflets, nine or ten in number, are obcordate and ciliated, while the stipules are orbicular and finely-toothed.

Coronilla cappadocica may be propagated by division in October, or by seeds sown out-of-doors in April. Flowering at present on the rock garden here it makes a charming spectacle and fully justifies its inclusion. *Reginald E. Moore, University Botanic Garden, Cambridge.*

IRIS GARDEN.

IRIS ENSATA.

"ONE ocean of green, which in the end of May becomes a pale sea of blue. For its form is far better than elsewhere—generous in shape, and of the loveliest, softest blend of milky blue and lavender and cream and white, yet further enhanced by its delicious fragrance of Hyacinth." So wrote Farrer of that form of Iris ensata, growing in north-western Kansu, and, after looking on a well-grown clump here in England, one may realise the beauty of such a flower in masses, as he saw it.

The leaves vary in length from eighteen to twenty-four inches, overtopping the flowers by quite six inches; the leaf-surface is slightly glaucous, while there are about six prominent ridged veins on each side. The flower stems are flattened, bearing usually two flowers at the apex; the bracts are narrow, pointed, and sharply keeled, approximately three inches in length, and the pedicels are slender, that of the second flower on each stem being about double the length of the first. The ovary is marked by six longitudinal ridges and furrows, and is of a darker shade of green than the pedicel.

The underside of the haft of the falls is prominently striped with green, and this, being carried out into some of the veins, gives a creamy coloration to the upper surface; the latter has a white ground marked by pale lavender veining, particularly near the edges. The falls are oblong-oval in shape, about one-and-a-quarter inch in length, and have a pointed tip. The style-branches and standards are both of a delicate lavender tint, the former becoming almost white and transparent on the edge, with upright, toothed crests; the standards are over two inches from base to tip, three-fifths-of-an-inch wide, and taper to a blunt point.

The scent of the flower is most noticeable and, as Farrer stated, strongly resembles that of Hyacinths.

Farrer gave it as his opinion that this species should be grown under the driest possible conditions, fearing that too much moisture would encourage leaf and not flower production. However, provided the position is not shaded, the plant would appear quite at home, and flowers abundantly on a moist border.

Iris ensata occurs in various forms right across Asia, and has been figured in the *Bot. Mag.*, the *Bot. Reg.* and in Sweet's *Flower Garden*, under different synonyms. The original name was published by Thunberg, so far back as 1794, in *Transactions of the Linnean Society*. **B. O. M.**

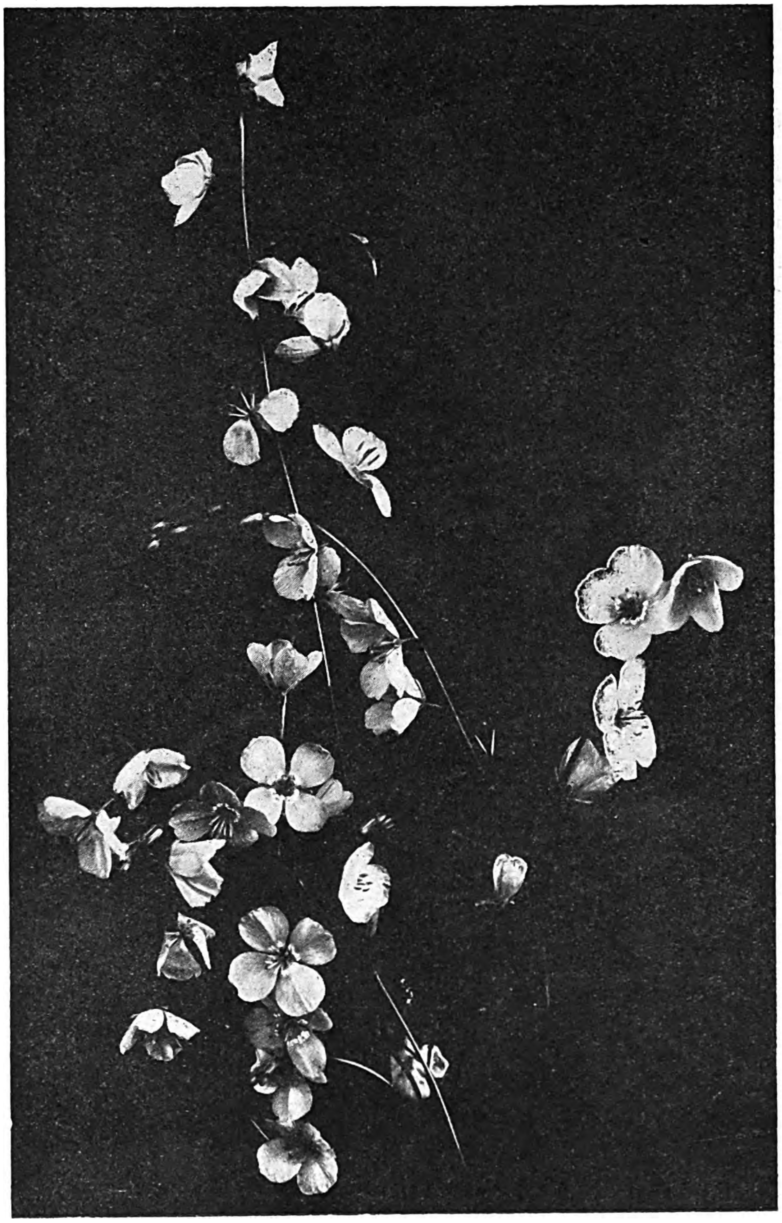

FIG. 233.—HELIOPHILA LINEARIFOLIA.

R.H.S. Award of Merit, June 11. Flowers blue with white centres. Shown by Mr. T. Hay, Hyde Park. (see p. 462.)

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LANCETILLA EXPERIMENT STATION, HONDURAS.

THREE years ago the Tela Railroad Company established, on the Atlantic coast of Honduras, Lancetilla Experiment Station, which is devoted to the testing of new plants of potential economic value in tropical America, and to the study of factors affecting growth and production of Bananas. The Banana is the chief article of export from the north coast of Honduras. The Tela Railroad Company and the Truxillo Railroad Company possess large plantations in the lowlands of Honduras, centering about Tela and Puerto Castilla, from which many millions of bunches of Gros Michel Bananas are exported annually. In some parts of the Honduran coast Sugar is produced for export, but this crop is of only minor importance.

Lancetilla Station is situated in the Lancetilla Valley, at an elevation of sixty-five feet, three miles south of the port of Tela. On each side of the valley rise steep hills, with a maximum elevation of 2,000 feet. The floor of the valley was formerly planted with Bananas, but these have been abandoned for several years, and the land has been invaded by coarse weeds and small trees. The adjacent hills are heavily forested except where small clearings have been made by native squatters for the cultivation of Maize, Beans, Rice and vegetables. Land thus cleared, by felling and burning the trees, is planted only one or two seasons, then left to grow up with shrubbery, which soon covers it thickly. In this state the land is known locally by the term "Guamil."

The virgin forest of the hills is very dense, but in steeper places the undergrowth is scant. The forest is composed of a wide variety of hardwood trees, the most abundant being Brosimum terrabanum (called here Masica), Virola (Myristica) species (Sangre), and Dialium divaricatum (Paleta). Mahogany (Swietenia, and Spanish Cedar (Cedrela) occur but sparingly. Many of the forest trees attain gigantic dimensions, especially the Ceibas (Ceiba pentandra), whose massive trunks are usually supported by broad, thin, bracket-like buttresses. There are many epiphytic trees in the forest, particularly wild Figs (Ficus) and Clusias, which in age kill their host plants and stand alone as huge trees. Large, woody vines or lianas drape many of the trees, noteworthy among them being a Marcgravia and several water vines, the chief of which, perhaps, is the Central American Grape, Vitis tiliaefolia. From a section about a meter long cut from the stem of one of these vines, there may be obtained a glass of potable water-like sap, which satisfies thirst.

The herbaceous flora of the forest includes many rare or otherwise interesting plants. Species of Heliconia, Costus and Calathea are abundant and often showy. Ferns and other cryptogams are plentiful, and epiphytic Orchids and Bromeliads are well represented. Among the Orchids I noted only a few showy ones. Vanilla (V. fragrans) is the commonest member of its family, the vines running to the tops of tall trees. Although Vanilla is frequent in the wild state in many parts of central America, I have seldom been so fortunate as to find it in flower, and the seed-pods are seen but rarely.

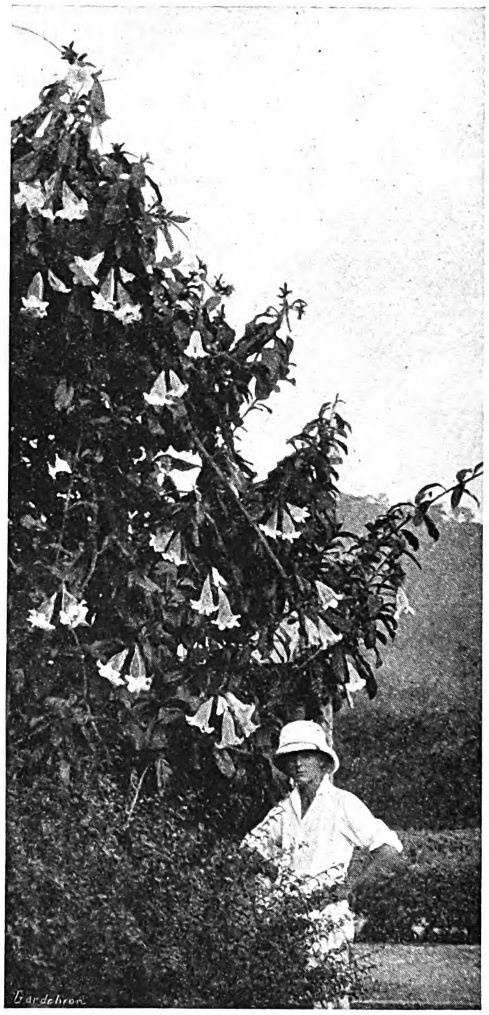


FIG. 234.—LANCETILLA: BEAUMONTIA GRANDIFLORA ON THE SIDE OF A SLAT HOUSE.

Palms contribute a conspicuous element of the vegetation. Most abundant and imposing is the Cohune, Corozo, or Manaca (Attalea Cohune), the largest North American Palm, which forms dense undergrowth on the hillsides up to 800 feet, and often fills clearings or pastures in the lowlands. Its leaves are used commonly as thatch for huts. The nuts are rich in oils, but so hard that its extraction is extremely difficult.

In low or swampy ground, Oreodoxa oleracea towers gracefully above the surrounding trees. On the hill slopes grow several Chamaedoreas, beautiful because of their slender, smooth, green stems, graceful leaves, and highly-coloured inflorescences and fruits.

The young inflorescences of the Chamaedoreas, enveloped in green spathes, resemble small ears of Maize. In central America the tender spadices, before they unfold, are used commonly as a vegetable, being dipped in egg and fried. They have a slightly bitter but agreeable flavour, and are delicious when properly prepared. The inflorescences are produced continuously and only a few cultivated plants are needed to insure a constant supply of this desirable vegetable. In some of the many central American species of Chamaedorea the inflorescences are too bitter to be palatable.

A low, slender Malortiea with perforated leaves is a curious and ornamental Palm, and the Geonomas, although of more sparing occurrence, add a pleasing element to the Palm flora. There are several formidably armed Bactris species, from one of which, known locally as Lancetilla, in reference to the broad, compressed spines, the Station derives its name. A small Bactris, which grows in dense clumps and is profusely armed with long, stiff, needle-like spines, forms impenetrable thickets in the coastal swamps near Tela.

The Panama-hat Palm, Carludovica palmata, which, of course, is not a member of the Palm family, abounds in the forests, but little use is made of it, either here or elsewhere in central America. Often it is associated with its relative, Cyclanthus bipartitus, whose curiously biparted leaves and screw-like fruits are certain to attract attention.

An outstanding member of the Honduran flora is Dracaena americana, the only American representative of its genus, a medium-sized tree, suggesting the tree Yuccas, with few branches, bearing large, showy panicles of small, white flowers, which are succeeded by fleshy, globular, orange-coloured berries. It is a plant well worthy of cultivation.

The Director of the Lancetilla Station is Mr. Wilson Popenoe, formerly of the United States Department of Agriculture, and well known for his activities in the introduction of tropical American plants into California and Florida, especially in the case of the central American Avocados. It is of interest to note in this connection that the Guatemalan rough-skinned Avocado (Persea americana var. drymifolia) grows on the hills above Lancetilla, where the trees attain a huge size. Cacao also is a frequent inhabitant of the forest. Both these plants are of rare occurrence in central America in a wild state, although both are general in cultivation.

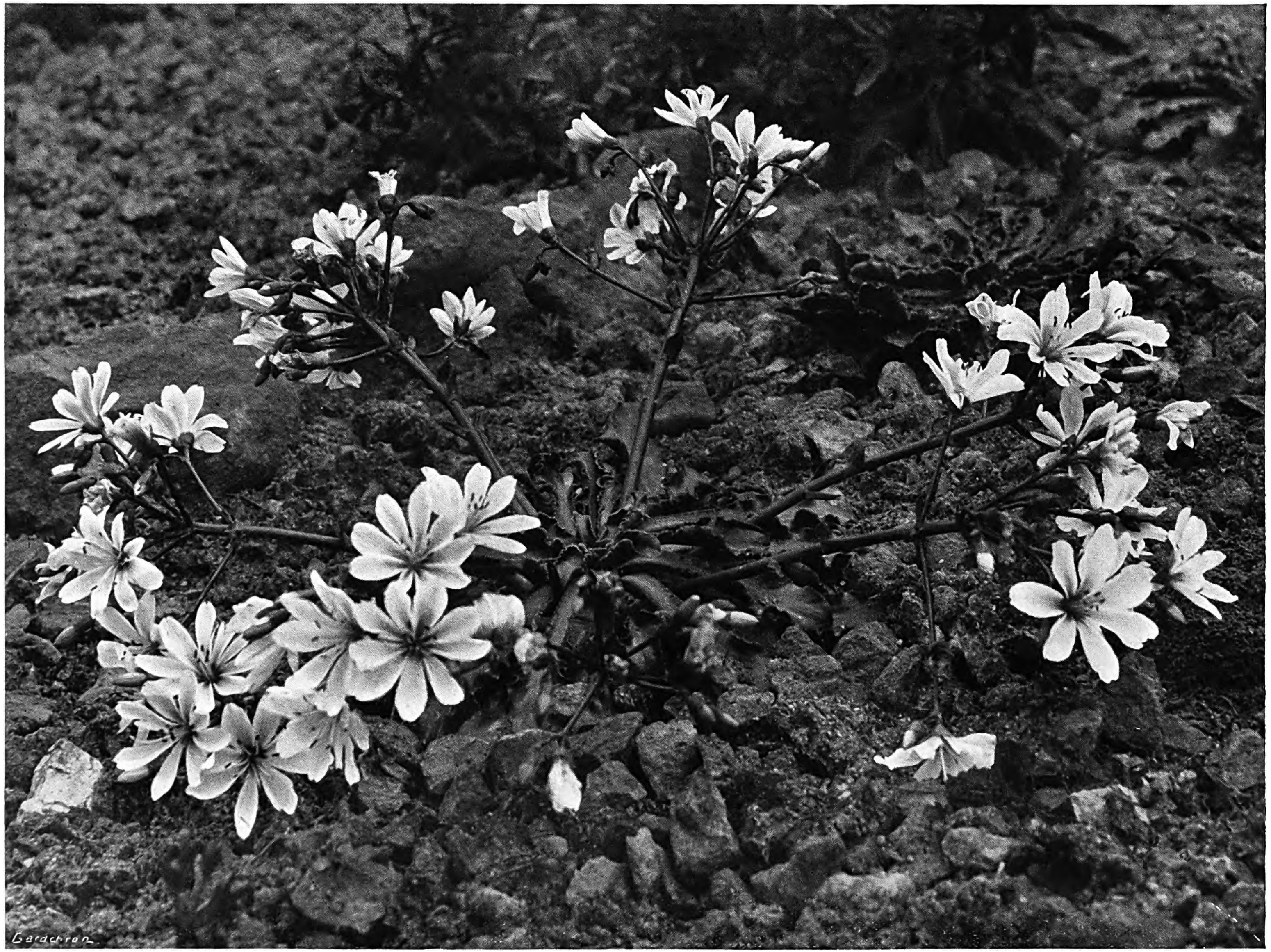
The Horticulturist of the Station is Mr. Alfred F. Butler, an old Wisley student, and formerly employed on the estate of the Hon. Vicary Gibbs, Elstree, England, under Mr. Edwin Beckett.

The Station possesses an adequate office building, living quarters, a plant shed, a small glasshouse, and a slat house for the growth of young, tender plants. Living conditions are exceptionally pleasant at Lancetilla because of the agreeable climate and the numerous modern conveniences available. To this the writer can testify most emphatically, after having had the privilege of passing there the winter of 1927-8, while engaged in studying the flora of the region, preparatory to the publication of a systematic report upon it.

There are extensive plantings at Lancetilla, another plantation near Tela, and still another at Quebrada Seca, some fifty miles inland, where the rainfall is less and conditions more favourable for the growth of certain plants. The precipitation at Lancetilla is heavy, sometimes so much as 120 inches a year. In one twenty-four hours during January, 1928, about fourteen inches of rain fell, with more on the succeeding days. Most of the rain falls from July to January, and in the spring and summer there is often a prolonged dry season. The temperature is frequently high, as is to be expected in the lowlands, but during the past winter it was delightful for most of the time, and blankets were a necessity at night.

Lancetilla Station occupies an attractive situation upon elevated, well-drained ground, with a beautiful view of the deep green hills up the valley into the far distance. The grounds have been planted with a large variety of ornamental and useful woody plants. Because of the short time since the plantings were begun, most of the shrubs and trees are still very small, but in this

Supplement to THE GARDENERS' CHRONICLE.



LEWISIA HOWELLII.

climate growth is so rapid that in a few years they will make an imposing display. Already the Bamboos, the Wood Oil Trees, Spathodeas, and some of the Palms, stand out conspicuously.

On each side of the path leading to the office has been planted a row of the Pejibaye Palm (Guilielma utilis), the plants already ten feet high. This Palm, almost unknown outside the limited area in which it is native, is, after the Coconut, the best of the central American species as a source of food. In Costa Rica it is planted abundantly about many of the country places, and the ripe fruits are in great demand during their short season. Two to three inches in diameter, when boiled they have a firm yellow flesh resembling that of a Sweet Potato, and in flavour perhaps superior to Chestnuts.

Comparatively little effort has been devoted to the importation of ornamental plants, those of economic value receiving chief attention. However, a variety of Palms is being grown successfully, among them being species of Areca, Arenga, Caryota, Chamaedorea, Cocos, Corypha, Elaeis, Geonoma, Kentia, Latania, Licuala, Martinezia, Thrinax and Zalacca. Other ornamental plants under cultivation are Ravenala; Bauhinias, especially that fine shrub, B. Galpini (Fig. 235), with brilliant orange-red flower clusters; Spathodea, sometimes called Tulip Tree, a desirable shade tree in this region because of its gaudy blossoms and rapid growth; Petrea arborea, the Purple Wreath, one of the most gorgeous of tropical American vines on account of its lavish display of long-persisting racemes of bright blue flowers; Beaumontia grandiflora (Fig. 234), with its large, white flower trumpets, so suggestive of the Daturas; Bougainvillaeas of several varieties; Thunbergia grandiflora, with rich blue blossoms; and a superb collection of large-flowered hybrid Hibiscus brought from Hawaii. The Codiaeum, Acalypha, and Nothopanax species, universal in central American gardens, have been omitted, and wisely so.

Since Bananas are of chief local interest, attention has been given to the introduction of varieties from widely separated parts of the world (Fig. 236). One of the handsomest ornamental plants cultivated at Lancetilla is Musa Uranoscopos, a dwarf plant forming clumps only four feet high, and producing large, bright red, erect flower spikes. The inflorescences are so similar to those of some of the Heliconias of the neighbouring forest that the relationship of the cultivated Musa with the members of the only American genus of the Banana family is easily recognised. The Heliconias bear so little superficial resemblance to the Bananas and Plantains that only the botanist would recognise their kinship.

Pineapples also have received attention at the Station, and forty-two varieties have been collected from remote regions. The Pineapples have been transplanted recently to the dryer region of Quebrada Seca, where Citrus fruits are grown successfully (Fig. 237).

A good-sized plantation of the Tung Oil Tree (Aleurites Fordii) has been made, and the trees have grown well. Specimens of the Chinese Wood Oil Tree (Aleurites montana) have developed even more rapidly, and already have reached a height of nine to twenty-two feet. The Japanese Wood Oil Tree (A. cordata) is also being tested.

Bombax and Ceiba species are being tried as a source of fibre. Balsa (Ochroma) trees grow luxuriantly in the valley, and spring up like weeds in every clearing. Besides furnishing in their seed-pods a soft elastic fibre, Balsa trees are noted for the extreme lightness of their wood, lighter than cork, which is exported from central America to the United States for the manufacture of life belts and the insulation of refrigerators. It is an amusing sight to see on the docks the loading of Balsa timbers. Until they are handled they have the appearance of very heavy logs, and one is startled when a labourer lifts in one hand a large Balsa log and raises it easily to his shoulder.

Rubber-yielding plants naturally are being tested here, and plantings have been made of the Cryptostegia species, of Para Rubber, and of Funtumia elastica. Central American Rubber (Castilleja elastica) grows wild plentifully in the vicinity. Some Castilla Rubber is now gathered in central America for export, and nearly all the wild trees in the forest bear the oblique slashes indicating that they have been tapped. Castilleja trees are often planted about the "fincas" as shade, and as a source of Rubber.

About forty-five plants, mostly Leguminous, have been tested in the grounds with a view to their utilisation as cover crops in Banana plantations. Some of them have shown great promise, but others which have proved useful elsewhere have been failures in Honduras because of unfavourable conditions of soil, climate or reproduction. Some of the plants have made but scant growth, while others have grown so luxuriantly that they have not only covered the ground beneath the Banana plants, but threatened to cover the Bananas themselves.

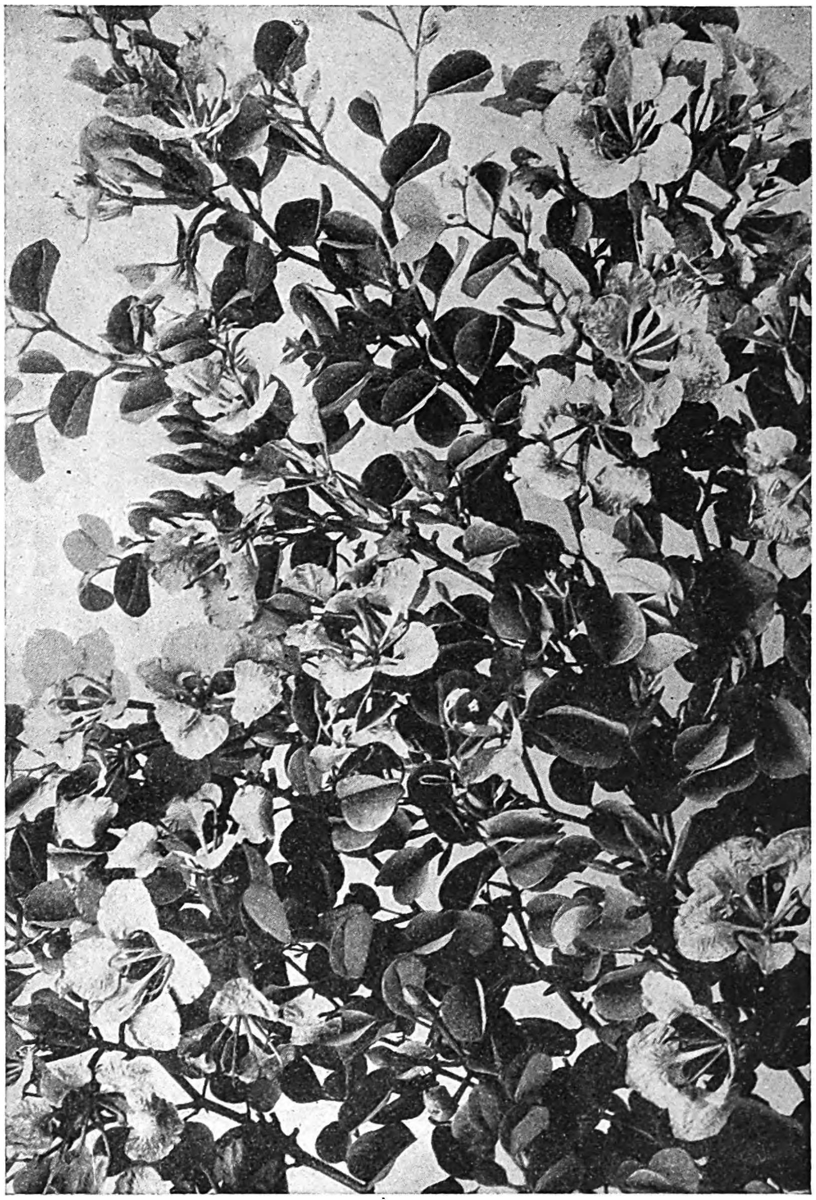


FIG. 235.—LANCETILLA: BAUHINIA GALPINI.

The permanent plantings at Lancetilla, according to a list recently compiled, include 370 species and varieties of plants of economic or ornamental value. The collection of tropical Asiatic plants is the largest to be found anywhere in America, and the same may be said of the representation in several other outstanding groups.

Some of the important fruit trees of the Old World tropics, which are little-known in America, are being tried upon a comprehensive scale. Many of the Asiatic species were obtained especially for the Station by Dr. O. A. Reinking during his travels in the East. Particular pride is taken in the large number of Mangosteen trees, whose growth is encouraging. One large Mangosteen tree established in the Tela region fruits freely, and there is, consequently, every reason for expecting that this famous fruit may be grown here successfully upon a large scale. The plantings of Mangosteen trees are the most extensive in America. Already 275 seedlings have been transplanted to the permanent grounds, and it is planned to increase the number to 375 during the present year. Eight other species of Garcinia, besides G. Mangostana, also are in cultivation here.

The collection of Mango varieties is a large and important one. The Mango is the favourite fruit of the native central American people, and since most of the trees growing in the region are seedlings of inferior quality, it would be of great benefit to improve the general quality of the fruits. The representation of Citrus fruits at Lancetilla is unequalled anywhere in this general region of the continent. The plantings of Lychee (Nephelium Litchi) have succeeded remarkably well, and the young trees, striking because of their highly-coloured new foliage, are growing rapidly.

Among the less well-known fruit trees which are being grown at Lancetilla are Anacolosa luzoniensis, the Galo; Artocarpus odoratissima, Averrhoa Carambola, Bouea macrophylla, Canarium commune and C. ovatum; Clausena lansium, Dillenia indica, Durio zibethinus, the Durian; Eugenia uniflora, the Pitanga or Surinam Cherry, a fine hedge plant, producing spicy-flavoured, red fruits; species of Euphorbia; Flacourtia Ramontchi, Gnetum Gnemon, Inocarpus edulis, Myrciaria (Eugenia) cauliflora, and species of Hephelium.

Two groups of trees which at first thought would seem out of place in the lowland tropics, are Castanea and Castanopsis, yet trees received from the United States Department of Agriculture and grown from seeds gathered in Yunnan by J. F. Rock, are thriving and making satisfactory growth. In the genus Castanopsis there are represented C. argentea, C. diversifolia and C. Hystrix.

Of Coffee there are fourteen species and varieties. Coffee is the most important export crop of the interior of central America, and that produced in these republics has long held an enviable position in foreign markets because of its superior quality. Coffea arabica, the only species grown commercially at the present time, is cultivated on a large scale only at altitudes of approximately 2,000 feet or more, but it is planted occasionally at lower elevations, sometimes even at sea-level, for household consumption.

The Asiatic timber Bamboos are well represented at Lancetilla, and extensive plantings have been made of some of them. Seedlings of Bambusa polymorpha and B. Tulda, when transplanted to the open ground, have reached a height of ten feet in less than a year. A native Bamboo of the Honduran coast, Guadua aculeata, is a striking feature of the local vegetation. It grows in swamps, often forming large clumps or dense thickets, and rising to a height of sixty feet or more, the stems having a corresponding diameter. It requires only a very few weeks for the giant stems to make their full growth. Sections of the stems are utilised at Lancetilla as flower pots. On the Pacific slope of central America the Asiatic Bamboos, which are planted commonly, furnish important construction material, many of the huts being formed of the heavy stems. On the Honduran coast I saw one hut whose walls were formed of sections of the local Guadua (called here Tarro) flattened out like boards. This type of construction is common in Ecuador, but I have never noticed it elsewhere in central America. Perhaps this example had its origin in South American influence.

A well-managed vegetable garden is maintained at Lancetilla, and another at Progreso, both kept by the gardeners in as neat condition as the curious Chinese gardens of Panama. Most of the vegetables grown are those familiar in northern gardens. Potatos, of course, do not succeed at low altitudes in central America, although they are planted extensively in the mountains, usually at elevations of over 5,000 feet. Tomatos, strangely enough, do not thrive at Lancetilla, although the common wild form, with small, Cherry-like fruits, grows in waste land in the vicinity. The cultivated plants are attacked by fungus and other pests, which make their successful growth impossible.

The vegetables most commonly grown along the Atlantic coast of Honduras are Maize, Beans, Onions, Garlic, Lettuces, Cabbages, Carrots, Radishes and Peppers. At Lancetilla several of the common Chinese vegetables are cultivated successfully. The Chayote (Sechium edule) a relative of the Cucumber, seems to succeed quite as well as in the highlands, where it is one of the favourite vegetables.

The most interesting of the vegetables grown at Lancetilla is the so-called Philippine Spinach —Talinum triangulare. This plant is really a native of tropical America, and grows wild in many parts of central America, but it seems to have been introduced into cultivation in the Philippines, and brought thence to Tela. The plant grows rapidly, producing an abundance of young leafy shoots which afford an excellent substitute for Spinach. The plant is easily propagated by seeds, and well deserves cultivation throughout the warmer parts of the earth. *Paul C. Standley, Field Museum of Natural History, Chicago.*

HAIR WORMS IN GARDENS.

AFTER warm showers, particularly during the spring and early summer, it is no unusual thing for the gardener to find on his plants a thin, hair-like creature resembling a miniature snake, twisting and turning in all directions. If he does not know what it is he naturally looks upon it as a foe, and fears that it may be very injurious. This will be the case more particularly when, as often happens, there are several at the same time. On occasion, they are so numerous as to have given rise to the idea that they have come in a shower, and have literally been brought by the rain.

All the old books and journals call these worm-like creatures Gordius aquaticus, and speak of them as though they all belonged to one and the same genus. This, however, is by no means the case. In appearance they resemble a piece of fine yellow silk, white cotton, or dark thread, varying in colour more or less with the species. They vary equally in length. The smaller forms may measure little more than half-an-inch, while the larger sometimes attain the length of a foot, although in general the dimensions are from two to four inches. Their colour is usually masked by the matter in the alimentary canal, but it is sometimes a rich yellow, at others dirty white or light brown. As is so often the case with the lower forms of life, they pass through transformations in which the larvae often differ widely from the mature forms. Even to-day, it is doubtful whether we have anything like an adequate knowledge of the group, since very little has been done with the species found outside the countries of Europe, while our native forms have never yet been studied exhaustively.

The following notes are not intended to be a technical survey, but may be of service to gardeners generally, and a guide to anyone who may wish to take up the study of a subject which will afford scope for original research. For such as read German the handiest and cheapest text book is the little volume of ninety pages whose title is given in the footnote.*

The Hair Worms may be regarded as near relatives of the Nematodes, some few of which they closely resemble, and are ranged in two groups. The first group (Mermithidae) consists of species of the genus Mermis, long, threadlike worms, not divided into segments as in the case of earthworms and fresh water worms, but looking like a piece of very fine catgut or glazed silk. Some of the species are only known at present in their embryonic or larval form, but there are two which frequently occur in this country and on the continent of Europe. In their free form, as found on plants in our gardens and elsewhere, they are quite destitute of mouth organs and other anterior accessories, and exactly resemble a living hair. They lay eggs, however which are very characteristic, out from which the larvae creep to find their way into the bodies of other larvae or insects, where they undergo their transformation. One form has been named contorta, on account of its habit of twisting itself around strands of grass or the stalks of plants. The male is usually small, and may be easily overlooked, but the female is usually about two inches long, whitish in colour, with a conical posterior extremity.

The second form (M. crassa) is, as its name implies, thicker and longer, often attaining a length of three to four inches. The larvae infest those of gnats and other insects which live in pools and still water, and it is in this larval stage that the feeding is done. The other two species which have been described are only known in their larval stage, and much work remains to be done before we can pretend to have mastered their life-history.

The other group (Gordiidae) is divided into genera of which three are usually recognised by zoologists. The best known of these, and the one which has given the name to the family, is Gordius. It recalls the Gordian knot. Only one species, the familiar G. aquaticus, is at present placed in this genus, and this sometimes attains a length of ninety centimetres, although it is only one millimetre (one-twenty-fifth-of-an inch) in diameter. The larva is found in the cockchafer and other insects. Paragordius is the name of the second genus, and Parachordodes of the third. Most of the species are of a brownish colour.

In order to distinguish the species special attention must be given to the following points. In the first place, one must observe the cuticle which may be smooth, covered with minute papillae, or marked with a fine network of crossing lines. Next in importance is the form of the posterior extremity, which may be forked, or have three processes. Then comes, finally, the presence or absence of a horse-shoe-shaped fold of the skin near the anus. The larvae, however, differ widely from the adult, and it would be necessary to give drawings in order to make the diagnosis intelligible (see *Gard. Chron.* for July 14, 1928, Fig. 16, p. 33).

I have received innumerable specimens belonging to the different species from every part of the British Isles, and think it probable that all the different species of Mermis and Gordius alluded to above are to be found in England. Probably the number would be considerably increased if the subject were taken up systematically by a student with sufficient knowledge and leisure. *Hilderic Friend, Solihull.*

PLANTS NEW OR NOTEWORTHY.

RHODODENDRON VANESSA.

(R. Souliei-Fortunei × R. Griersonianum.)

THIS hybrid was shown by Lady Aberconway and the Hon. H. D. McLaren, at Chelsea Show, and was awarded a First Class Certificate (see p. 384). It is the first hybrid from R. Griersonianum to be exhibited, and it has inherited many of the best characteristics of this fine species. The other parent is a hybrid between R. Souliei and R. Fortunei variety Mrs. Butler. The colour of R. Vanessa is a bright shade of salmon-pink; the plant exhibited was of dwarf habit, and bore nine trusses of flowers.

The cross was made in June, 1924; the seeds were sown in February, 1925; and the first flowers were produced in May, 1928. Such quick results, together with its unique colour, is a good augury of the value of R. Griersonianum as a parent. *P. B.*

NOTICE OF BOOK.

Debt Collecting without Tears.

THE sixth edition of this handy little manual* on collecting debts through the medium of the County Court, has been thoroughly revised and brought up to date, the whole volume being re-set in slightly larger type than that previously used, and the forms re-modelled. The result of the revision is a slightly larger book, but it is still small enough to be handy, while none of its good points—which we have noted in regard to previous editions—has been lost.

We may, however, without intending to cavil, point out that while it is useful to know the procedure in a County Court summons, there is a middle course between conducting a case entirely alone, and handing it over *in toto* to a solicitor, paying for his services a fee so high as to make it unremunerative to proceed at all. This middle course consists in having recourse to a firm of debt collectors—there are quite a number in London and in the larger provincial towns—who have made a special study of this branch of the law, and who, by reason of the large size of their practice, can charge the most reasonable fees, and put through their business with the minimum of delay. However, there are doubtless many business men who for some reason or other wish to know the ins and outs of County Court practice, and to them this little book can be cordially and whole-heartedly recommended.

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* *Nematodes, Mermithidae und Gordiidae: Die Süsswasserfauna Deutschlands.* Gustav Fischer, Heft 15, Jena.

* *County Court Practice made Easy, or Debt Collecting Simplified*, by A Solicitor, London: Effingham Wilson, 16, Copthall Avenue, E.C. 2. Sixth Edition. Price 5s.

THE IRIS AS AN ECONOMIC PLANT.

Owing to the circumstance that "orris-root" and not "Iris-root" is the title in general use, the fact is often lost sight of that Irises, in addition to being plants of great beauty and ornamental value, are also of some economic importance.

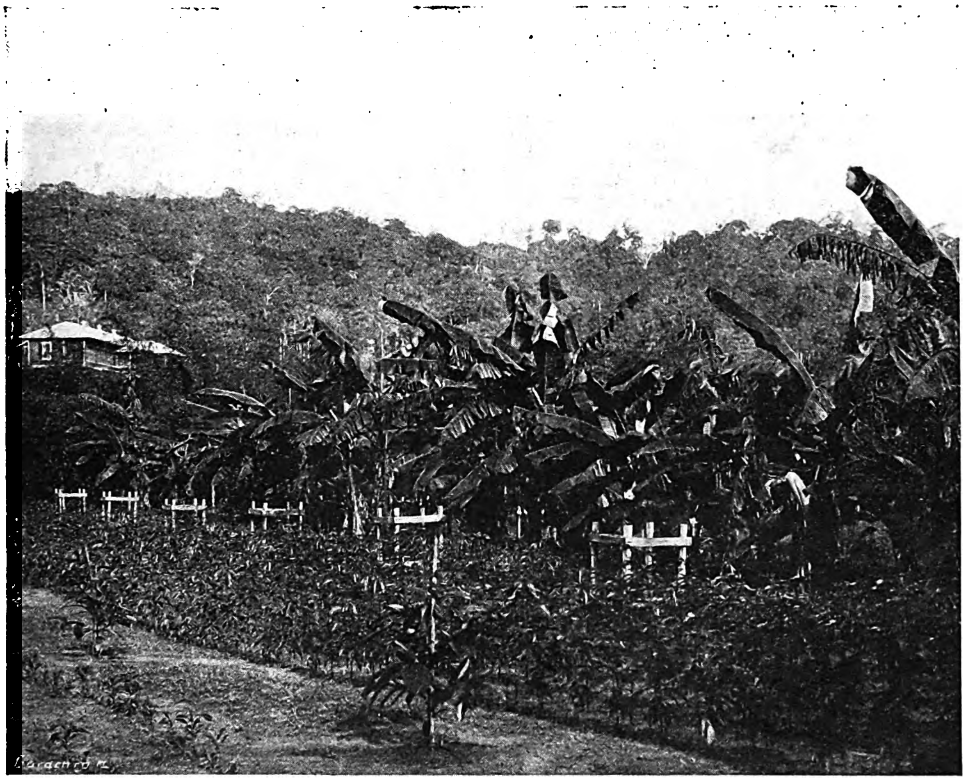

FIG. 236.—LANCETILLA: BANANA COLLECTION, WITH CITRUS SEEDLINGS IN THE FOREGROUND.

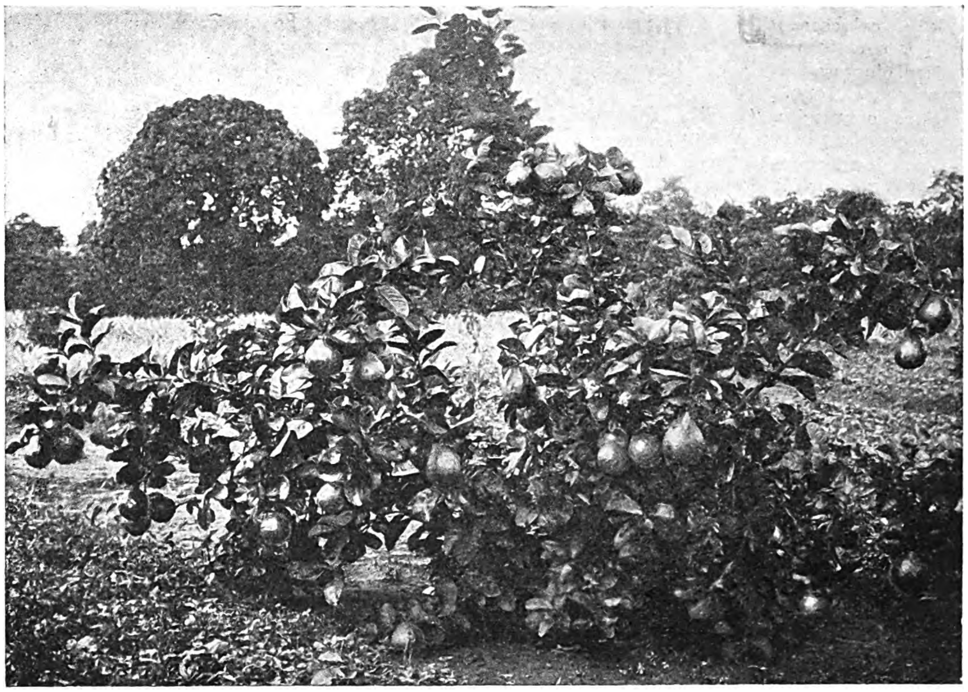

FIG. 237.—LANCETILLA: LEMON PONDEROSA AT THE QUEBRADA SECA STATION.

Irises are cultivated for their roots, or, more correctly, rhizomes, especially in Italy, the species grown for the purpose being Iris germanica, I. pallida and I. florentina.

The flowers are usually sold for ornamental purposes and the rhizomes harvested from June to August when they are well developed. The roots, strictly so called, and growing portions are removed, and the rhizomes immersed in water to cleanse them, after which they are peeled. As yet they have very little odour, the characteristic Violet-like fragrance only developing as a result of the slow drying process, which is effected, when the weather is favourable, by exposing the decorticated rhizomes, after washing, to the action of the sun's rays. In bad weather, drying is carried out in artificially-warmed and well-ventilated chambers.

The dried rhizomes are whitish in colour, hard in texture and variable in size. The best are obtained in Florence from I. pallida. These are very light in colour and deliciously fragrant. Other varieties are usually somewhat darker and not so odorous.

The rhizomes contain a considerable amount of starch, and, when they are powdered, yield a fragrant and very soft material of a light buff colour, which finds useful employment in the manufacture of dentifrices and toilet-powders. So-called "Violet-powder," for example, usually contains fifty per cent. or more of powdered orris-root, mixed with various proportions of such ingredients as Maize starch (Cornflour), talc, zinc oxide and boric acid. Orris-root is also used in the manufacture of Violet sachets and Violet-scented toilet soaps.

The Violet odour is a very rare one in nature, Acacia Farnesiana (Cassie) being one of the few plants whose flowers have a perfume at all resembling that of Sweet Violets. The Violet-like odour of orris-root is due to the very small amount of a specific substance, irone, which it contains. By distilling orris-root with superheated steam and condensing the vapours in long, air-cooled tubes, a small amount of an essential oil may be obtained, the yield being only four or five parts of oil, or even less, per one thousand parts of orris-root. This oil is a solid, fatty substance at ordinary temperatures, and is known as "orris oil concrete." It consists of about eighty-five per cent. of myristic acid, which is quite odourless, together with the odorous irone and traces of other substances. By appropriate means, the myristic acid can be removed, yielding a liquid oil consisting largely of pure irone. Naturally, this oil is very expensive, but there is a considerable demand for it for the manufacture of Violet scents.

To prepare these entirely from odorous material extracted from sweet Violets themselves would be prohibitively costly, owing to the fact that the amount of this material present in sweet Violets is microscopically small. Nowadays, the basis of most Violet scent is a substance called "ionone," which is synthetically prepared from citral, isolated from the essential oil of Lemon-grass (Andropogon flexuosus, a native of Madras, and A. citratus) and acetone. This substance, it is interesting to note, is isomeric with irone, which has also been made synthetically, that is to say, the molecules of the two substances contain the same number and sort of atoms but differently arranged in the two cases.

Owing to its relatively non-volatile character, the addition of a little orris-oil to a Violet-scent based on ionone, serves to fix the odour, making the perfume more permanent.

The distillation of orris-oil from orris-root is mainly carried out in the perfume factories of Grasse in the south of France, rhizomes imported from Tuscany being mostly employed.

Another and cheaper form of liquid orris oil is obtained by distilling orris-root with Cedar-wood oil, or by mixing this or some other suitable oil with the concrete. Naturally, orris oil made this way is much inferior to the true oil obtained from the concrete by removing the myristic acid.

It may be added that orris oil is used in making a number of high-class perfumes besides those having a Violet scent, the odour of orris blending well with such other odours as those of Mignonette, Lavender and Opoponax.

It may be mentioned, in conclusion, that, by extracting orris-root with a suitable volatile solvent, an oleo-resin can be obtained, which is also serviceable in perfumery for fixing such odours as those mentioned above. *H. S. Redgrove, B.Sc.*

THE GENUS PRIMULA.

(Continued from p. 429).

OFFICINALIS (Hill). The Cowslip.
(Vernales.)

The type of this well-known native plant produces a tuft or rosette of oval or oval-oblong, blunt leaves usually contracted into a short, winged stalk; margins toothed or scalloped; both surfaces more or less covered with minute, whitish hairs. Flower stem covered with minute down, three to six inches tall, bearing a many-flowered umbel of yellow blossoms. Corolla concave, three-eighths- to five-eighths-of-an-inch across; lobes rounded, notched; tube longer than the calyx. Flowers from March to May.

Grows in damp meadows and pastures over the greater part of central Europe.

Var. amplicata (Koch.). Calyx bell-shaped, flowers yellow; mountains of western Germany and Poland.

Var. ascapa (Gioran). Flower stem absent, stalks short; mountains of Verona, Italy.

Var. autumnalis (Pax). Flowers small, few, produced in the autumn; England.

Var. calycida (Schube.). Calyx cleft to the base; eastern Germany.

Var. uniflora (Hennings). Scape one-flowered; Holstein, Germany.

Var. macrocalyx (Bunge). Foliage covered with fine, greenish or greyish down; calyx broad at the base, lobes pointed, shortly triangular; flowers golden-yellow, five-eighths-of-an-inch to three-quarters-of-an-inch across; eastern Prussia, Urals, Caucasus, Turkey and northern Persia.

Var. alpina (Oktye). Very dwarf plant with an umbel of two to five sessile flowers; Kachetien.

Var. colchica (Pax). Foliage covered with grey down below; Russian Armenia and Songaria.

Var. virescens (Pax). Foliage green below; it has the same geographical range as the type.

Var. canescens (Opiz.). Leaves distinctly stalked, hoary below or nearly smooth; flowers half- to three-quarters-of-an-inch across; eastern and middle Europe.

Var. calvescens (Pax). Leaves green and rather smooth below; Austria and Hungary.

Var. cinerascens (Pax). Leaves hoary below; southern Europe.

Var. composita (Beck). Flowers in two superposed umbels; Austria.

Var. hardeggensis (Beck). Leaves densely covered with white down; Austria.

Var. Velenovskyi (Domin.). Leaves almost entire, nearly smooth; Bohemia.

Culture: The type, together with its numerous forms, may be grown in good, somewhat heavy loam in an open situation, abundantly supplied with water when in growth.

OPTATA (Farrer). Beck's P.
(Nivales.)

A handsome species, with foliage not fully developed at its flowering period. It has a short, stout rootstock which produces a tuft of broadly lance-shaped, or spathulate-oblong, blunt, bright emerald-green leaves about three inches long and five-eighths-of-an-inch wide, tapering to a rather short stalk dilated at the base; margins furnished with regular, saw-like teeth; both surfaces more or less white mealy; underside often with a conspicuous mealy margin. Flower stem four to five inches tall, green or slightly tinted with purple below, densely coated with white meal above and bearing one globular, or rarely two, superposed umbels but little separated, of violet-blue or lavender-blue blossoms with a darker eye. Corolla about one inch across, very slightly concave, with broadly oval or egg-shaped, notched or at times toothed lobes; tube cylindrical, membranous. Flowers in June and July.

Grows on the banks of brooks in limestone districts, at Siku, in Kansu, north-western China, at 12,000 to 14,000 feet above sea-level.

Culture: The requirements indicated are good, somewhat heavy, calcareous loam, and an open position well supplied with water when the plant is in growth.

ORBICULARIS (Hemsl.). Orbicular-flowered P.
(Nivales.)

A very beautiful species with a tuft of rather leathery, oblong-lance-shaped, nearly erect, blunt leaves two to six inches long, gradually tapering to a broadly-winged stalk somewhat dilated at the base; margins edged with minute teeth or nearly entire; upper surface more or less smooth, underside sparsely mealy. Flower stem erect, six to twelve inches tall, covered with yellow meal upwards and bearing a compact, rounded umbel of five to fifteen bright yellow, fragrant blossoms, on stalks about half-an-inch long. Corolla flat, about one inch across, divided into five somewhat overlapping, rounded, quite entire lobes; tube about as long as the calyx, cylindrical below, dilated upwards and contracted at the throat where there is an obscure ring. Introduced in 1905. (*Gard. Chron.*, June 23, 1906, Fig. 164, p. 403.)

Grows in damp, rich soil in open situations in central Szechuan.

Culture: As for P. nivalis. *A. W. Darnell.*

(*To be continued*).

HOME CORRESPONDENCE.

The Sweetest-scented Flower.—I quite agree with *R. Kemp* (p. 369) that this "opens up a tremendous field for argument," and I guess that after the argument in any large company the opinions on the subject will remain divided. A few more delightfully scented subjects may be mentioned, such as Pelargonium capitatum (Attar of Roses), P. vitifolium, P. tomentosum (Peppermint-scented), Mentha rotundifolia (Apple-scented Mint), M. Pulegium (Pennyroyal), Thymus vulgaris, T. citriodorus, Artemisia Abrotanum (Southernwood), Clove-scented Carnations, Hesperis matronalis (single or double Dame's Violet), Nicotiana affinis (Night-scented Tobacco), and Chrysanthemum Balsamita (Costmary). It will be noted that many of the above have a pungent, although pleasant odour that stimulate the senses on a warm day. I was tickled with the idea of the Vine in flower being a rival to Lily-of-the-Valley. To this I would suggest that a houseful of Peach trees being disbudded recalls the smell of Almonds. We read in some old books that Narcissus poeticus makes some people ill. I do not dislike the smell of the Night-scented Tobacco, but I have had to put two of them outside my door overnight! Some men have told me that Sweet Peas do not smell sweet. It is very doubtful if many people would care to live in a room with a plant or two of Lilium auratum in bloom. An avenue of Lime trees in full flower during the evening gives off a balmy odour that some would call stifling. Really we are not all constituted alike; each has some favourite flower or plant; and some have little or no sense of smell. I have been asked by a gardener if his Melons were "beginning to smell," showing that they were ripe. Under these various aspects of the question, could there be a consensus of opinion as to the sweetest-scented flower? *J. F.*

Difficulties of the Scottish Forestry Commissioners.—In your issue of June 8 (p. 429), I am taken to task by Sir John Stirling Maxwell, Bart., for a phrase I used in a paragraph under the above heading, to the effect that "the great difficulty is to make landowners' sentiments overcome their cupidity" in the matter of Scottish afforestation. Let me recount the little incident which led to my penning the phrase. Accompanied by the head forester, I was wandering the other day over the woodlands of a Scottish estate. In our ramble I was struck with the potentialities there were for afforestation work, and hazarded the remark to my companion —"Why not call in the aid of the Forestry Commissioners; they will be more than pleased to give advice and assistance in such matters." "Ah, well," replied the forester, "the Laird will not hear of it; he will not tolerate any dictation as to what will or will not be done on his estate." There, in a nutshell, was the inspiration of my phrase. Even Sir John himself admits there are landowners holding these views, but possibly I was too sweeping, or, shall I say, somewhat ambiguous in my assertion. I never for a moment meant to imply the phrase attached to the vast majority of Scottish landowners. Time and time again during past years I have written in these columns of the superb work the Scottish Forestry Commissioners have done and are doing for the afforestation of Scotland, and of the able assistance they are receiving from Scottish landowners. And in this respect let me note that Sir John himself, by pen and speech (broadcasting studio and lecture hall) has done yeoman service in the good work. It is a cause that lies very near to his heart, and may it long remain there. *Your Correspondent.*

Flowering Cherries.—In the issue of *The Gardeners' Chronicle* for June 8 (p. 420), your correspondent, *Prunyrus*, writing of the flowering Cherries, has occasion to remark that "the authorities Koidzumi, Miyoshi, Wilson, and, later, Ingram, differ in their classification." In so far as this refers to myself, the above statement is misleading. Having been schooled in ornithology—a science in which nomenclatorial priority is more strictly adhered to than in horticulture—I have made every effort to adopt the first used name when describing a species or variety. Since I have followed one or the other of these authors in almost every instance, it cannot be truthfully stated that I "differ" from my predecessors. The seeming divergence of the other writers is open to explanation. Possibly on account of Koidzumi's very inadequate descriptions, Miyoshi appears to have largely ignored his colleague when compiling his monograph of the Japanese Cherries. As Wilson's work appeared almost simultaneously with Miyoshi's, he naturally had no opportunity of referring to the Tokyo publication in his *Cherries of Japan*, but, later, he issued a supplement acknowledging the priority of a number of Miyoshi's names. With regard to the classification of the Japanese garden Cherries, I have already explained my reasons for following Miyoshi in keeping all the cultivated forms together under the one specific heading—Prunus serrulata. They have obviously been evolved from a number of species, but the parentage of many is too obscure to be satisfactorily recognised. Your correspondent states that Eva Gauntlett and Troiaya are "very similar" to Kanzan. All the plants that I have seen under these names have been indistinguishable from Kanzan, and their appellations appear to be only the invention of some ignorant nurseryman. I would also like to take this opportunity of pointing out that Hokusai and Ojochin are not the same plants. Uzu-Sakura and Hokusai may prove to be synonymous, but Ojochin is certainly a distinct variety. *Collingwood Ingram.*

Meconopsis Baileyi at Wisley.—Anyone who is fond of hardy flowers should visit the Royal Horticultural Gardens, Wisley, during the next few days, as a fine lot of Meconopsis Baileyi is now in flower and forms a sight that can only be seen in a few places in the United Kingdom the wonderful blue colour of this flower is becoming well-known, as specimens have been seen during recent years at Chelsea and other exhibitions, but to see it in masses, as it is at Wisley, is a sight that can never be forgotten. We hear and read criticisms of the work at Wisley but seldom find any of its good points mentioned, chiefly because, in my opinion, it does not advertise its work as it might justly do, and another reason, undoubtedly, is that much of the work done there is not easily understood by the general public. There are, however, very many interesting flowers to be seen at this time in addition to the above; and communications are much improved this year, as a service of express 'buses operates hourly from Oxford Circus. *W. H. Divers, V.M.H.*

[Mr. Divers overlooks the fact that we have published "Notes from Wisley" regularly, for several years.—Eds.]

SOCIETIES.

GRAND YORKSHIRE FLOWER SHOW AND GALA.

June 18, 19 and 20.—For the exhibition held at Knavesmire on these dates, the seventy-seventh occasion of the York Gala was favoured with brilliant weather. There was abundant sunshine and a pleasant breeze on the opening day, and a quite good attendance.

With the passing of the years and the variation of horticultural fashion, the character of the York Gala has altered considerably, while the personnel of the managing body has also changed. Specimen stove and greenhouse plants and giant Pelargoniums no longer provide the great feature of the show as they did in bygone days, when Bootham Park was the site of the exhibition.

Now-a-days hardy flowers are the main feature, and on this occasion they were well represented by alpine plants cunningly placed in rock gardens of varying size and importance, by bold groups of cut flowers from the herbaceous borders, and by such delightful florists' flowers as Lupins, Paeonies, Pyrethrums, Irises and Sweet Peas. Lupins are always a fine feature of the York show, and they were better than usual this year, for Messrs. Simpson and Son, Messrs. Harkness and Sons, and Messrs. G. Gibson and Co. all displayed generous spikes in a wide range of colours, the pink, fawn and chamois shades making a special appeal to the visitors.

Indoor plants were, however, not by any means forgotten, as evidenced by the numerous groups of graceful and brilliantly coloured foliage plants from stove and greenhouse, by the popular Begonias, Calceolarias, Orchids and Carnations, all of which were shown extensively and extremely well. Roses were much below the average, and for this failure the unkind season is responsible. Fruits, too, lacked the interest of old times, when McIndoe and others used to show fine collections of forced fruits, nevertheless, Messrs. T. Rivers and Son showed a grand lot of pot trees of Peaches, Nectarines, Citruses and Cherries, all loaded with fruits of the highest quality; this exhibit well deserved the Large Gold Medal awarded, plus the felicitations of the judges.

Floral designs were displayed in quantity, and the competition in this section of the show was larger and keener than usual.

The general arrangements of the show were admirably conceived and ably carried out, so that judging was finished well before the scheduled time, thus permitting all the awards to be placed in position before the public was admitted at 1 o'clock; indeed, the subscribers were admitted soon after noon. Mr. G. Y. Johnson makes an excellent Chairman and he is ably supported by the members of his Floral Committee, all of whom are strenuous workers, while John J. Hunt, Esq., as President, and Mr. P. Mennim, as Secretary, fulfil their respective duties to the general satisfaction of all concerned.

Housed in two large and broad marquees, the exhibition was very effective and the most colourful display yet seen at Knavesmire, and to this brilliant effect the trade groups made a very material contribution.

Groups.

Under this general heading come the rock gardens, arranged on a space twenty feet by fifteen feet, to be viewed all round. There were two competitors, and Mr. P. Gardner, Craven Nurseries, Addingham, secured the premier award of £15 with a pleasing display in which dwarf Conifers, Saxifrages, Oxalises, Violas and choice Primulas were grouped among and on the rocks, and in a moraine. The second prize fell to Mr. S. Pickering, Clifton, York, whose Water Lilies, Irises, alpine Asters and Violas were much admired.

The best ornamental rock garden, arranged on a space not exceeding thirty feet by twelve feet, was designed by Mr. P. Gardner, who used Azaleas, dwarf Conifers and Kalmias as a background for pleasing groups of Irises, Violas, Saxifrages and other attractive subjects; the second prize was won by Mr. S. Pickering, who employed coloured Maples and Pyruses as a background, and grouped Violas, Saxifrages and Primulas effectively; third, Messrs. A. Greenwood and Co., Wetherley.

Mr. T. M. Petch, Great Horton, was the only exhibitor in the class for a large group of miscellaneous plants; he was awarded the first prize for an exhibit of Palms, Codiaeums, Dracaenas, Hydrangeas, Fuchsias, Lantanas and Begonias. The foliage plants lacked that brightness of colour that adds so much to the beauty of an artistic grouping of plants.

In a smaller group class, the space allowed being sixteen feet by six feet, the competition was good, and Messrs. J. Cypher and Sons led with a bright display in which Liliums, Fuchsias, Thunias, Laelio-Cattleyas and Codiaeums were grouped effectively below a Fern-clad arch which was topped by a noble Tree Fern. The second prize was won by Mr. T. M. Petch.

In yet another group class, where cut flowers were permitted, Messrs. J. Cypher and Sons, Mr. T. M. Petch and the Clifton Fruit and Flower Growers' Co., secured the awards in the order given.

T. B. Bosvile, Esq. (gr. Mr. H. Bell), Gate Helmsley House, York, had the best group of herbaceous Calceolarias in a class that produced a fine effect. Major F. A. Robinson (gr. Mr. H. Lund), Dringhouses, and the Hon. G. N. de Yarburgh-Bateson (gr. Mr. W. Hobson), Deighton Grove, York, were successful exhibitors of tuberous Begonias, but in the leading class for these showy subjects, Messrs. Blackmore and Langdon won the premier award with a grand group of wonderful blooms in a great variety of colours. The hanging baskets of the varieties Fleur de Chrysantheme, Gladys and Mollie were very charming.

Orchids.

The seven classes devoted to Orchids provided a very attractive display. The exhibitors group their own plants together and not in the classes to which they belonged, and this does not make for ease or accuracy of judgment.

J. McCartney, Esq. (gr. Mr. C. F. Potts), Hey House, Bolton, won first prizes as follow: For three Orchids, with Odontoglossum Nerius, O. Crai and Cattleya gigas; for a single specimen Orchid, with Odontoglossum Buesh, carrying over fifty flowers; for six Orchids, with Vanda coerulea, Odontoglossum promerens, Laelio-Cattleya Canhamiana, etc.; for a specimen Orchid (amateur's), with Odontoglossum luteo-purpureum. He was also first for a dozen Orchids, his best plants being Brassia verrucosa, Dendrobium Dalhousieanum, Laelio-Cattleya Aphrodite, Cattleya Mossiae var. Wagneri, and Miltonias; second for a table of Orchids, and third for six Orchids.

Messrs. A. J. Keeling and Sons had the best table of Orchids, twelve feet by five feet, showing good Odontoglossums, Odontiodas, Vanda coerulea, Cypripedium Curtisii, Miltonias and Epidendrums. This firm also led for six Orchids, with Miltonia Sanderae, Cattleya Mossiae, Brassia verrucosa, Cypripedium Maudiae and Odontiodas; second, for a dozen Orchids, and second for a specimen Orchid, with a fine example of Anguloa Ruckeri var. sanguinea.

Messrs. James Cypher and Sons were awarded second prize for six Orchids, their set including a large Thunia Marshalliae, Laelio-Cattleya Dominiana, L.-C. San Juan and Cypripedium Lawrenceanum; and third prize for three Orchids.

Floral Designs.

Mr. F. H. Ward, York, led for a floral table centre with a design in blush Carnations, followed by the Clifton Fruit and Flower Growers' Co., with similar flowers; and Messrs. C. E. Simpson, who used orange Sweet Peas. Mr. F. H. Ward had the best hand-basket of flowers, showing a bold, rich design in yellow Richardias and golden Spanish Irises; second, Messrs. C. E. Simpson; and third, Messrs. Padgett and Watson.

The last-named firm led for a hand-basket of flowers (Orchids excluded), followed by Mr. W. C. Thorp and Mr. F. H. Ward, respectively. The best bowl of cut Roses was designed by Messrs. Backhouse Nurseries, Ltd., who used Madame Butterfly; Messrs C. E. Simpson and Mr. F. H. Ward secured the remaining awards. For a bowl of cut flowers, Messrs. Backhouse Nurseries, Ltd., Mr. F. H. Ward and Messrs. C. E. Simpson were placed as named; the first prize exhibit consisted entirely of art- coloured Gerberas.

Messrs C. E. Simpson led for a bride's bouquet, with a design of white Roses, Stephanotis, Gladioli and Lily-of-the-Valley; Messrs. Backhouse Nurseries, Ltd., were second, with Lily-of-the-Valley only; Messrs. Padgett and Watson, third.

Mr. F. H. Ward, Messrs. Backhouse Nurseries, Ltd., and Mr. W. C. Thorp secured the awards as given, for a bridesmaid's bouquet; while for a pair of hand-bouquets, the prize-winners were Mr. F. H. Ward, Mr. W. C. Thorp and Messrs. Padgett and Watson. For one hand-bouquet (open class), Mr. F. H. Ward, Messrs. Padgett and Watson and Mr. W. C. Thorp received awards.

Mr. F. H. Ward showed the best decorated table of fruits, Mr. W. C. Thorp coming second, and Messrs. C. E. Simpson, third.

Hardy Flowers.

The leading class in this division was for a collection of hardy perennials, including Liliums and other hardy bulbous plants or cut flowers, arranged in a natural manner, and to be viewed all round, on a space not exceeding 300 square feet. There were three competitors, and equal first prizes were awarded to Messrs. Bees, Ltd., and Messrs. Harkness and Sons. The former had a bold display of well-grown flowers of Irises, Poppies, Delphiniums, Pyrethrums, Lupins, Dianthuses and tall sheaves of Eremuri; theirs was a very artistic arrangement. Messrs. Harkness and Sons had splendidly grown Lupins in fine varieties, Pyrethrums, Poppies and other popular subjects, but their display was a trifle flat.

The points for this class were:—Quality of bloom, sixty; harmonious blending of colour, twenty; artistic arrangement and general effect, twenty; total one hundred. Messrs. Bees, Ltd., gained fifty, fifteen and twenty points, respectively, while Messrs. Harkness and Sons were awarded fifty-five, twenty and ten, the total being eighty-five in each case. Messrs. G. Longster and Sons were placed third.

In a smaller class for hardy flowers, Messrs. Bees, Ltd., Messrs. G. Gibson and Co. and Messrs. S. Gardner secured the awards in the order given.

Lupins were shown splendidly by Messrs. Harkness and Sons, who secured first prize, while their neighbours, Messrs. G. Gibson and Co., won second place; both showed a beautiful lot of flowers. Messrs. Bees, Ltd., led for a dozen bunches of hardy flowers, and in a similar class for amateurs, the prize-winners were Mr. W. Hutchinson, Mr. G. Millington and Mr. J. H. Jubb.

Mr. G. Prince was the most successful exhibitor of Roses and showed excellent sheaves and pillars of Irish Elegance, Pax, Emily Gray and La Rêve.

Awards to Non-competitive Displays.

Large Gold Medals.—To Messrs. T. H. Rivers and Sons, for fruit trees in pots (with congratulations from the judges); to Messrs. John Peed and Son, for stove and greenhouse plants: to Messrs. Dobbie and Co., for a delightful and brilliant exhibit of Sweet Peas; to Messrs. Allwood Brothers, for Carnations and hybrid Dianthuses, shown in grand style: to Messrs. Backhouse Nurseries, Ltd., for a fine rock garden; and to Messrs. Kent and Brydon, for an effective sunken garden.

Gold Medals.—To Messrs. E. Webb and Sons, for a large group of hardy and greenhouse annuals, etc.; Messrs. James Kelway and

Son, for Paeonies and Delphiniums; Messrs. C. Engelmann, Ltd., for perpetual-flowering Carnations; and to Messrs. W. H. Simpson and Son, for a particularly well arranged display of choice Lupins and Pyrethrums.

Silver-Gilt Medals.—To Messrs. R. H. Bath, Ltd., for Paeonies and Pyrethrums; Mr. H. N. Ellison, for Ferns; Messrs. G. Gibson and Co., for choice alpines and hardy Fuchsias; Messrs. Backhouse Nurseries, Ltd., for alpine plants; Messrs. Kent and Brydon, for alpines; Messrs. Maxwell and Beale, for alpine plants; Mr. A. Winn, for hardy flowers; Messrs. C. Bloom and Son, for a rock garden; and to Messrs. Maurice Prichard and Son, for alpines.

Silver Medals.—To Messrs. Toogood and Sons, for Irises; Mr. C. Holt, for hardy flowers; Messrs. Bakers, for hardy flowers; Messrs. Barr and Sons, for hardy flowers; the Hon. Geoffrey Howard (gr. Mr. E. Clements), Castle Howard, for Campanulas; Mr. G. W. Miller, for hardy flowers; Mr. J. Winn, for Violas; Mr. E. Clegg, for Violas and Pansies; Messrs. B. Ladhams, Ltd., for hardy flowers; Mr. F. Rich, for hardy flowers; Messrs. James Cypher, and Sons, for Fuchsias; Messrs. Blackmore and Langdon, for Delphiniums; Messrs. Walshaw and Sons, for Ivy-leaved Pelargoniums; and to Mr. R. V. Roger, for hardy flowers.

The Gardeners' Chronicle Medal.—To the Hon. Geoffrey Howard (gr. Mr. E. Clements), Castle Howard, Yorkshire, for a group of superbly grown plants of Cup-and-Saucer Campanulas.

Awards of Merit.

Paeony Kelway's Remembrance and *Paeony Lord Kitchener*, from Messrs. James Kelway and Son.

Hybrid Dianthus Sweet Wivelsfield.—From Messrs. Allwood Bros.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of this Society was held in the R.H.S. Hall on Monday, June 10, Mr. T. R. Butler presiding. Three new members were elected. Four members withdrew interest from their deposit accounts, which amounted to £18 7s. 0d., and one member over the age of seventy years withdrew £54 5s. 8d. from his deposit account. The sum of £99 18s. 3d. was passed for payment to the nominees of two deceased members. The sick-pay for the month on the Ordinary side came to £113 14s. 6d., and in the State section to £93 7s. 6d. The sum of £13 3s. 10d. was allowed in grants from the State section to six insured members for dental treatment, and twelve other cases were considered.

SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.

On account of the backwardness of the season, the spring exhibition of the French National Horticultural Society, which took place at Cours-la-Reine, in Paris, from May 24 to June 2, did not provide quite its usual wealth of blossom and colour; but the general arrangement left nothing to be desired, and the show presented a most attractive appearance.

The firm of MM. Moser, of Versailles, showed a typical modern garden, of which the centre feature was two parallel lines of water, the margins decorated with coloured pottery receptacles filled with Tropaeolums. In the background was a gaily coloured pergola clad with climbing Roses, and which served to frame an immense, curved mirror reflecting the central portion of the garden. The paths were marked out in round, white tiles laid on the turf. Dwarf Polyantha Roses in various colours, in which red and orange shades predominated, formed an effective contrast to blue Hydrangeas, the whole effect being bright and cheerful.

The Paris Florists' Syndicate had a collective exhibit, consisting of five "salons" intended to represent the part played by flowers at various stages in life, from birth to death. The first salon was a symphony in white; maturity was represented by rich tones of yellow and gold; decorations for the silver and golden-wedding-anniversaries followed; and finally, the wreaths and floral decorations for a funeral. This last portion of the exhibit was intended as a protest against the modern tendency to proscribe the use of flowers at funerals, as at the funeral of the late Marshal Foch, which constitutes a serious menace to the florists' trade.

The firm of MM. Vilmorin-Andrieux, although not exhibiting for competition, had a large group in the centre of the tent. The group was a varied one, consisting of annual and biennial hardy plants, arranged with a view to presenting a light and brilliantly coloured effect; the form was a large rectangle with a hollow centre, the whole tastefully displayed.

The finest garden Irises were not yet in flower at the period of the exhibition, and although the weather was warm, they were not out until some days later. However, Messrs. Cayeux et Le Clerc, of Paris, had a very fine group of modern varieties, including Fédora, yellow; Madame de Sevigné, one of the finest of the plicata section; Germaine Perthius, a large, purple-violet variety; Jean Chevreau, creamy-yellow; Shekinah, citron-yellow; Fidelio, blue, with clear violet falls; Marc Aureau, lavender and violet; and Lohengrin. They also showed some very fine new varieties, which were awarded Certificates of Merit, namely Vert Galant, Durandal, Farandole, Nemo, Président Pilkington, Cassandre and Evolution.

The prize for the finest Iris of the year (not yet in commerce) was awarded to the variety Vert Galant, which also formed one of the trio (Durandal and Evolution being the other two) to gain the award for the three finest varieties, all being raised by the firm of Cayeux et Le Clerc.

MM. Vilmorin-Andrieux had also a large group of Irises artistically displayed in sheaves, set in cane baskets. At the opening of the exhibition most of the varieties shown belonged to the so-called "intermediate" section—Dorothée, Dauphin, Helgé, Diamond, etc.—which would, in a normal season, have been over. In addition, there were some very fine new varieties with large flowers, including Debussy, very pale pink; Andromede, smoked violet; Bellatrix, a very fine glossy violet, washed with yellow; Fra Angelico, smoked nut-yellow; Van Dyck, violet, with smoked falls; Velouté, velvety black-violet; Alliés, reddish, shading to brown; Mignard, pale mauve-pink, etc. Several of these received Certificates of Merit.

MM. Defresne, of Vitry; MM. Lévèque, of the same town; M. Nonin, of Chatillon-sous-Bagneux; and M. Royer, of Versailles, all showed Roses. Hothouse plants were exhibited by the Versailles Horticultural College, and Cacti by MM. Thiebaut, of Paris. Alpine and hardy plants formed the group sent by MM. Laumonnier-Ferard, of Paris, while M. Coutis, of Garche, and M. Lievre, of Vitry, showed scenes respresenting modern gardens, with pergolas and porticos. Rhododendrons were exhibited by M. Croux, of Chatenay; trees, shrubs and Conifers by M. Lecolier, of La Celle-St.-Cloud, M. Thuilleaux, also of La Celle-St.-Cloud, and M. Martin, of Louveciennes. A magnificent collection of vegetables was exhibited by MM. Vilmorin-Andrieux et Cie.

The Grand Prix d'Honneur of the President of the Republic was awarded to M. Nomblot-Bruneau, for a very fine collection of pot fruit trees, trained in various forms and covered with fruits, including Gooseberries, Peaches and Apples. The second Grand Prix d'Honneur was won by M. Defresne, of Vitry, for his collection of Roses.

There were no Orchids whatsoever.

M. Royer, of Versailles, had a fine display of Roses of the dwarf Polyantha section, comprising new varieties of Dutch raising, notably the following seedlings of Dr. Ruyter and Kesbergen:—Perfection, bright red; Rudy Korte, carmine-red; Kersbergen, fiery red; Gloria Mundi, vermilion-red; Paul Crampel, orange; Dainty, pink; and Madame Huding, orange.

Among the exhibits of MM. Cayeux was a charming little display of Cineraria Naine Idéale (Ideal Dwarf), the plants measuring only twenty centimetres in height.

The *Revue Horticole*, of Paris, was celebrating its centenary year by a very fine exhibit—a pergola furnished with climbing Roses. Two charming young girls, in appropriate costumes, symbolised respectively the years 1829 and 1929.

Certificated Irises.

The following were shown by MM. Cayeux et Le Clerc:—*Vert Galant*, large flower, coppery-red, deep garnet-red falls. *Durandal*, Pallida section, coppery-reddish-purple and garnet-red. *Farandole*, lilac-pink, falls purplish-red. *Nemo*, self-coloured blue. *President Pilkington*, very deep indigo colour. *Cassandre*, standards smoky grey, falls garnet-red. *Evolution*, standards golden-yellow, falls garnet-red.

The following were shown by MM. Vilmorin-Andrieux et Cie:—*Nicée*, deep lilac, standards slightly smoked. *Phocée*, lilac-mauve, falls white. *Judée*, deep lilac-pink. *Egée*, large variegated flowers, standards lightly smoked. *Colisée*, reddish-violet, falls a deeper colour. *A.M.*

ROYAL CALEDONIAN HORTICULTURAL.

At the monthly meeting, held at Edinburgh, on June 4, Mr. R. L. Scarlett, who presided in the absence of the President, congratulated Mr. Jeffrey, Director of the City Parks, on the excellent floral display in Princes Street Gardens on the occasion of the recent visit of the Duke and Duchess of York.

The admission of twenty-nine new members was announced by the Secretary, and thereafter Dr. Balfour Gourlay, Cambridge, delivered a lecture on "A Botanical Trip to Chile," which he made in 1927, along with Mr. Clarence Elliott. Their journeyings were illustrated by a series of lantern slides, several of which testified to the wealth of plant life in a part of the country where rain seldom falls.

In the competitive classes, first prizes were awarded to Mr. G. Godsmark, Luffness Gardens, Aberlady, for a vase of Carnations, and to Mr. J. A. Sword, Cramond, for two Lettuces.

Exhibits were particularly numerous and of a high standard of quality. The City Park Department staged a lovely group of the Lupin Pink Pearl, together with Hydrangea Parsival; and Messrs. Dobbie and Co. were represented by a collection of Cottage and Darwin Tulips. Silver Medals were awarded to both exhibits. The Edinburgh firm also exhibited interesting examples of Roses, Pelargoniums, Fuchsias and Allwoodii Pinks grown in glass jars containing sand, gravel and water. Mr. Robert Fife explained that the American florists claimed they could flower certain plants for market in six weeks by keeping them in water, and the exhibits were the result of an experiment to throw light on the subject, sand and gravel being used to keep the plants in position. The water was never changed, fresh water being added from time to time, together with certain solutions containing soda, potash, iron, lime and magnesia. The Roses, which were of the Shot Silk variety, were lifted in March, and one of the plants had produced a flower. All the plants did better in sand than in gravel, and as he was continuing the experiments, he hoped to show better results next year.

Other exhibits included a new Strawberry named Early Strathearn; specimens of Balfour's Late Broccoli measuring twenty-five inches in circumference, and the produce of one root of Dawes' Champion Rhubarb, weighing 23¾ lbs., all of which were grown by Mr. J. W. Scarlett, Inveresk. A display of alpine plants by Mr. F. Glass, Murrayfield, received a Cultural Certificate, and two vases of Tulips (Princess Elizabeth and Bartigon) staged by Mr. A. C. Bell, were awarded a vote of thanks, an acknowledgment also accorded to Mr. Scarlett.

SALISBURY GARDENERS'.

ON Monday evening, June 3, at the kind invitation of Mr. and Mrs. S. R. Christie-Miller, over one hundred members and friends of the Salisbury Gardeners' Society, accompanied by Mr. A. C. Jonas, Vice-President; Mr. S. W. Tucker, Chairman, and Mr. W. F. Gullick, Secretary, spent a delightful time in the grounds and gardens of Clarendon Park. The name of Christie-Miller is so closely connected with horticulture that rarities were anticipated, but even the most sanguine of the party hardly expected to view so great a variety of trees, shrubs and plants amid such a glorious setting.

Mr. and Mrs. Christie-Miller, with their gardener, Mr. G. Perryman, met the party on arrival, and immediately conducted it on a tour of inspection, through semi-woodland along winding pathways where masses of Rhododendrons, and bold plantings of Viburnum tomentosum and its variety Mariesii, with occasional rich red Maples, were to be seen, to the Dell and Wild Garden, which less than twelve months since were banks of Nettles, and are now a veritable paradise. Cunning waterways and miniature lakes, banked with thousands of Primula japonica, P. pulverulenta and P. Bulleyana, with here and there masses of P. Aileen Aroon, P. helodoxa and P. Bartley's Pink, provided a feast of colour. Here, too, were hundreds of Iris laevigata, casting their beautiful reflections in the clear water, while high up on the banks, grand specimens of Cytisus Donard's Seedling, Diervilla Eva Rathke, just coming into flower, and arching sprays of Tamarix and Berberis, combined with a setting ordained by nature, made a picture which will live in the memory of those present.

Reluctantly leaving this enchanting spot, attention was drawn to splashes of colour in the distance, which were found, on nearer approach, to be large specimen Rhododendrons—Corona, Mrs. Stirling, Goldsworth Yellow, Doncaster, etc.—and a number of species, including a fine plant of R. Falconeri, all in beautiful condition.

Proceeding across the terrace front, still gay with Wallflowers, to a wide border of choice shrubs, fine specimens of Rhododendron cinnabarinum and R. Loderi were noted, just passing out of flower; also a grand plant of Azalea coccinea var. speciosa. This plant, backed by a giant Rhododendron ponticum, produced a wonderful effect, startling yet beautiful. From here the party passed to the Iris garden, which, although less than twelve months old, was gay with many choice varieties. Beautiful heads of Majestic, Aphrodite and Souvenir de Madame Gaudichau, were in splendid form. Other outstanding varieties were Evadne, Dream, Alcazar, Lord of June, and a fine group of the maroon and yellow Iris King.

The herbaceous borders, a little later, undoubtedly look resplendent with their bold plantings of Delphiniums, Papavers, Lupins, etc. The kitchen garden is by no means a prominent feature at Clarendon Park, but even here, under the skilful management of Mr. Perryman, who undoubtedly believes in good cultivation, some excellent crops were noticed.

Judging from the healthy batch of seedling Lilies in the frames, including a number of Lilium centifolium, a few years hence the woodland walks of Clarendon Park will not only contain choice Rhododendrons, but groups of Lilies also. Certainly a more delightful spot for growing them it would be impossible to find.

Effects of the damage by frost were apparent in many choice shrubs. A giant Magnolia salicifolia (probably one of the finest in England), is completely destroyed, while one large Abutilon vitifolium has been killed, and another specimen is just breaking at the base. Pittosporums also have suffered, but with a gorgeous display by so many beautiful shrubs and plants, these losses are hardly noticeable to the visitor.

The thanks of the Society were conveyed to Mr. and Mrs. Christie-Miller and their gardener, Mr. Perryman, through Mr. A. C. Jonas and Mr. W. F. Gullick, for a really most delightful evening.

Obituary.

Carl Kirch.—We regret to record the death, at the end of last month, of Mr. C. Kirch. Starting with a large rock garden and herbaceous borders at Albemarle Road, Beckenham, Mr. Kirch added extensively to his garden during recent years, and at the time of his death held one of the largest stocks of rare alpine plants in the country; these were admirably grown in a large, double-spanned house and in a long range of frames. His present gardener, Mr. Harris, was previously in charge of the rock garden at Wisley, to which post his late gardener has succeeded. Mr. Kirch was a frequent and successful exhibitor at the Royal Horticultural Society's shows. He was engaged in business in the Central Meat Market, where he was wont to collect large sums for St. Bartholomew's Hospital. A man with a great heart, his last act was to plan a set of rooms at this Hospital where patients' friends could spend the night.

ANSWERS TO CORRESPONDENTS.

ANTS IN PEACH HOUSE.—*W. F.* Ants are very troublesome creatures in fruit houses, as, apart from feeding on the ripe fruits, they spread about such pests as mealy-bug or aphides that may be present. Boiling water, where it can be used, is a sure remedy. Ballikiurain Ant Destroyer, a poison, is also a very effective remedy. Kamforite or a little bisulphide of carbon placed well down into their runs will quickly remove or destroy them.

CARNATIONS DISEASED.—*J. C.* The Carnation foliage is affected with bacteriosis following an attack by thrips, the dead bodies of several being found within the growing points. The weak and deformed shoots show that the plants have received a decided check in growth. Faulty watering and an excessive amount of overhead syringing will produce similar malformation in many varieties. The plants should receive a stimulating fertiliser and this, together with careful watering, will allow the plants to grow away and produce normal growths.

LADS' WAGES.—*V. K.* As a rule, well-developed boys, fourteen to fifteen years of age, receive 15s. per week; a few gardeners start these boys at 12s. per week and increase the amount every three or six months, according to ability. Afterwards agricultural wages, as fixed, are generally paid in large private gardens, these varying according to the county or district.

LEASE OF GARDEN.—*J. J. M.* Without seeing the documents it is impossible to give a definite reply, but if the lease that was granted to your brother-in-law has been assigned to you, the landlords can enforce the covenants as to repairing and painting against you as assignee and against your brother-in-law as the original lessee.

NAMES OF PLANTS.—*E. T. M.* Dicentra eximia; obtainable from any nurseryman who deals in hardy herbaceous plants.—*A. S.* 1, Prunus Padus; 2, Allium giganteum; 3, Cotoneaster horizontalis; 4, Rosa Hugonis; 5, R. sericea; 6, Saxifraga Sibthorpii; 7, S. trifurcata hybrid; 8, S. trifurcata × S. hypnoides; 9, S. hypnoides (southern form); 10, S. hypnoides; 11, S. Hostii var. altissima; 12, Asplenium trichomanes; 13, Akebia quinata; 14, Polgala vulgaris; 15, Epimedium rubrum.—*G.* 1, Pyracantha coccinea; 2, probably a Eupatorium, but please send a better specimen; 3, Deutzia gracilis; 4, Lonicera Xylosteum; 5, impossible to name, specimen too scrappy.—*J. C.* A Poplar, possibly Populus berolinensis, but impossible to be certain from a single leaf.—*H. P.* Cryptomeria japonica.—*S. J.* Prunus Padus.—*A. M.* Macleania insignis.—*J. S.* Chrysogonum virginianum.—*Muntham.* Rosa spinosissima var. altaica, a Siberian Rose sold in nurseries as Rosa altaica.—*W. A. H.* Paeonia tenuifolia var. flore plena.—*A. P.* 1, Not recognised, send when in flower; 2, Brodiaea (Tritelia) uniflora; 3, Phillyrea media; 4, Teucrium fruticans; 5, Erica mediterranea; 6, Prunus persica var. flore albo pleno; 7, Prunus Sieboldii (syn. P. Watererii); 8, Spiraea prunifolia var. flore pleno.

PEACH TREES NEWLY PLANTED.—*B. M.* Young Peach trees, three years old, planted last October, should have been well watered in after planting to settle the soil well down among the roots. This would have carried them through the winter months, as an excess of water when the trees are at comparative rest is almost as bad as the lack of it when they are in active growth. At no time during the growing season should Peach trees feel the want of water, and if the drainage and compost is all right they will need water at least every three weeks at this season of the year. A mulching of horse manure or light litter will help the trees, and will be found a great protection to the surface roots. Very few, if any, fruits should be allowed on the trees the first year. Every effort should be made by syringing the trees twice daily on bright days to encourage growth, and so build up good trees for succeeding seasons' crops.

STEM EELWORM IN ONIONS.—*G. B.* Your Onions are heavily infested with the stem eelworm, Tylenchus dipsaci. The autumn and early-sown plants are also attacked by the fungus Mucor subtilissimus. These may be saved by the avoidance of nitrogenous manures, *e.g.*, nitrate of soda, etc., which tend to produce sappy growth. Dress the plants with sulphate of potash. The small plants cannot be saved, and should be pulled up and burnt. Great care should be taken to prevent the spread of the eelworms by garden tools and the boots of workers from the infected land. Refrain from planting Onions on the infected land for a period of at least three years.

TOMATO PLANTS DISEASED.—*F. W. R.* Your Tomato plants are affected with one of the Phytophthora foot-rot fungi. Destroy badly infected plants and water the remainder with freshly-made Cheshunt compound. The fruits show signs of buckeye disease, due either to the same fungus or to a closely allied species which attacks the fruits on the lower trusses. The plants should be mulched with straw to prevent the infected soil from splashing on to the fruits. The soil from the borders should be steam sterilised before being used again for Tomatos. Water from dirty tanks is often infected with the spores of the fungus.

TOMATO FRUITS DISEASED.—*F. Y., C. M. F.,* and *J. W.* The Tomato fruits are suffering from blossom-end-rot, a disease induced by an insufficient amount of water in the soil over a number of days. It has been shown that soil moisture affects the development of the disease. Nitrogenous manures should be applied, using nitrate of soda rather than sulphate of ammonia.

VIOLA FOOT-ROT.—*H. G. M.* The Viola plants are attacked by a species of Phytophthora which causes "foot-rot" in many plants. The infected plants should be removed from the bed and burnt and the ground watered with Cheshunt compound. It is advisable to water round the remaining healthy plants with the same compound. The millipedes may be destroyed by applying naphthalene at the rate of three to four ounces to the square yard around the plants. The ground should be lightly forked over and the material distributed and watered in.

Communications Received. — H. S.—J. C.—W. J. E.—D. I.—W. A. D.—J. H.—W. H. M.—J. S.—F. H. H.—J. P.—E. S.—H. B.—G. F. W.—A. M. S.—F. J.—D. G. C.

MARKETS.

COVENT GARDEN, Tuesday, June 18, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum, per doz.	10 0-12 0
—elegans ...	10 0-12 0
Aralia Sieboldii	8 0—9 0
Araucarias, per doz.	30 0-40 0
Asparagus plumosus ...	12 0-18 0
—Sprengeri ...	12 0-18 0
Aspidistras ...	16 0-60 0
Aspleniums, doz.	12 0-18 0
—32's	24 0-30 0
—nidus ...	12 0-15 0
Cacti, per tray, 12's, 15's ...	5 0—7 0
Crassulas, per doz.	24 0-27 0
Crotons, per doz.	30 0-45 0
Cyrtomiums ...	10 0-12 0
Fuchsias, per doz.	12 0-18 0
Heliotropes, per doz.	15 0-18 0
Hydrangeas, white, per doz.	24 0-30 0
—pink and blue, per doz. ...	24 0-36 0

	s. d. s. d.
Lilium longiflorum, per doz.	18 0-24 0
Marguerites, white, per doz.	16 0-21 0
Nephrolepis, in variety ...	12 0-18 0
—32's	24 0-36 0
Palms, Kentia,	30 0-48 0
—60's	15 0-18 0
Pelargoniums, per doz. ...	9 0-18 0
Primula malacoides, 60's, per doz. ...	7 0—8 0
Pteris in variety	10 0-15 0
—large, 60's ...	5 0—6 0
—small „ ...	4 0—5 0
—72's, per tray of 15 ...	2 6—3 0
Rhodanthe, pink and white ...	12 0-15 0
Roses, Polyantha, per doz. ...	18 0-21 0
Verbenas, pink and scarlet, per doz.	12 0-18 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	9 0-10 0
—cuneatum, per doz. bun. ...	5 0—6 0
Asparagus plumosus, per bun., long trails ...	2 6—3 0
—med. sprays	2 0—2 6
—short „	0 9—1 0
—Sprengeri, bun. long sprays...	2 0—2 6
—med. „ ...	1 6—2 6
—short „ ...	1 0—1 3
Carnations, per doz. blooms	2 0—5 0
Coreopsis, per doz. bun. ...	3 6—4 0
Cornflowers, blue, per doz. bun.	1 6—2 6
—pink, per doz. bun.	1 6—2 6
Croton leaves, per doz. ...	1 9—2 6
Daisies, large white, per doz. bun.	3 0—4 0
Delphinium, blue, per doz. spikes	3 0—4 0
Ferns, French, per doz. bun.	10 0-12 0
Forget-me-nots, per doz. bun.	6 0—9 0
Gaillardia, per doz. bun. ...	5 0—6 0
Gladiolus, Blushing Bride, per doz. bun. ...	12 0-15 0
—The Bride, per doz. bun. ...	12 0-15 0
—Peach Blossom, per doz. bun.	12 0-18 0
—Scarlet, per doz. spikes ...	4 0—5 0
—Primulinus, per doz. spikes ...	3 0—3 6
—large varieties, per doz. spikes	4 0—6 0
Gypsophila elegans, white, per doz. bun.	4 0—6 0
Heather, white, per doz. bun.	9 0-12 0
Iceland Poppies, per doz. bun.	2 6—3 6
Iris, Spanish, blue, per doz. blooms	0 9—1 0
— — white, per doz. blooms	0 9—1 0
— — yellow, per doz. blooms	1 0—1 6
— — mauve ...	0 9—1 0
Larkspur, mauve, per doz. spikes	2 6—3 6

	s. d. s. d.
Lilium longiflorum, long, per bun. ...	2 0—2 6
— — short, per doz. blooms	1 6—2 0
—speciosum rubrum, long, per doz. ...	4 0—5 0
— — — short, per doz. ...	2 6—3 0
Lily-of-the-Valley, per doz. bun.	18 0-30 0
Marigolds, per doz. bun. ...	4 0—6 0
Myrtle, green, per doz. bun.	1 6—2 6
Nigella, blue, per doz. bun.	6 0—9 0
Orchids, per doz.	
—Cattleyas ...	18 0-30 0
Paeonies, red, 6's, per doz. bun.... ...	12 0-15 0
—white, per doz. bun.... ...	12 0-15 0
Pyrethrum, single red, per doz. bun. ...	2 0—2 6
—double pink, per doz. bun.	3 0—4 0
Roses, per doz. blooms—	
—Columbia ...	3 0—4 0
—Richmond ...	2 6—3 6
—Yellow ...	2 6—3 6
—Molly Crawford	2 6—3 6
—Butterfly ...	2 0—3 6
Scabiosa caucasica, per doz. bun. ...	10 0-12 0
Smilax, per doz. trails ...	5 0—6 0
Statice, mauve, per doz. bun.	9 0-12 0
—Suworowii, per doz. bun.	9 0-18 0
Stock, double white, per doz. bun.... ...	6 0-12 0
—double pink, per doz. bun.	12 0-15 0
Sultans, white, per doz. bun.	9 0-10 0
—mauve, per doz. bun. ...	10 0-12 0
Sweet Peas, various, per doz. bun.... ...	6 0-18 0

REMARKS.—Single Pyrethrums appear to have had a very short season, and the small quantities still available are very poor in quality. Irises are still arriving in large quantities, the most reliable blooms being from home growers. Gypsophila elegans supplies are the best received this season, and are more than sufficient for present requirements. Other subjects which have shown a considerable increase are white Pink Mrs. Sinkins, Cornflowers, Delphiniums, Iceland Poppies, Marigolds, Nigella (blue), and the small-flowered Gladioli, Gandavensis varieties are increasing daily in quantity and now embrace fine shades of pink, scarlet and white. Sweet Peas are arriving in fine condition, and all the best grades are soon cleared. Lilium longiflorum is again on the down grade, while L. lancifolium is very scarce. Carnations and Roses have been in excellent demand during the past week, and many orders arriving late could not be met with reliable blooms. Supplies of Coreopsis and Gaillardias are increasing daily, also of some very fine varieties of Daisies. The most recent arrivals are white and mauve Sweet Sultans, Scabiosa caucasica (blue), Paeonies from home-growers, and pink and blue Erigerons.

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples—	
—New Zealand—	
—Cox's ...	22 0-27 6
—Delicious ...	13 0-15 0
—Sturmer ...	15 0-16 0
—Dunn's ...	13 0-15 0
—Australian—	
—Delicious ...	14 0-16 0
—Granny Smith	20 0-24 0
—Cleos ...	14 0-16 0
—Dunn's ...	13 0-15 0
—Tasmanian—	
—Granny Smith	16 0-18 0
—French Crab	14 0-15 0
—Sturmer ...	14 0-15 0
Bananas, per bun.... ...	17 0-27 6
Gooseberries, English, per ½ sieve ...	3 0—5 0
—Dutch, ½-bag	2 0—3 0
Grapes, English—	
—Muscat ...	7 0-15 0
—Hambro, per lb.	2 6—5 0
Cherries, English, per ½-sieve ...	14 0-18 0
—Italian, per tray	6 0—8 0
Apricots—	
—Spanish ...	6 0—8 0
Figs, per doz....	6 0-24 0

	s. d. s. d
Pears—	
—New Zealand—	
—Winter Nelis, per tray ...	5 0—7 0
—Winter Cole	4 6—6 0
—Australian—	
—Winter Nelis	6 6—8 6
—Josephine, per case	20 0-22 0
—Beurre Bosc	20 0-24 0
—Winter Cole	17 0-19 0
Plums—	
—Algeria ...	6 0—8 0
—Italian ...	5 0—8 0
Grape Fruits—	
—Cape, per case	25 0-30 0
—Jamaica ...	35 0-40 0
Lemons, per case—	
—Messina ...	12 0-22 6
—Naples ...	22 0-40 0
Melons, each ...	2 0—8 0
Nectarines, per doz.	12 0-36 0
Oranges—	
—Denia ...	26 0-30 0
—Mercia ...	26 0-40 0
—Cape Navels	18 0-26 0
Peaches, per dozen ...	8 0-30 0
Pineapples, case	21 0-36 0
Strawberries, Southampton, per 2 lb. chip	1 9—2 0
— —	3 0—4 0

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus—	
—Devon ...	4 0—4 6
—Evesham ...	1 6—3 0
—Giant ...	6 0-12 0
Beans—	
—Worthing, finest, per lb.	0 9—1 0
—Guernsey ...	0 9—1 0
Beet, per bag ...	4 0—6 0
Cabbage, Spring, crates, 24's-30's	2 0—4 0
Carrots, French, per doz. bun.	4 0—9 0
Cauliflowers, per doz.	5 0—6 0
Cucumbers, per flat	14 0-20 0
Endive, French, per crate, 18's and 24's ...	8 0—9 0
Lettuce, per box 24's ...	1 6—2 0
Mint, per doz. bun.... ...	2 0—3 0

	s. d. s. d.
Mushrooms—	
—cups, per lb.	1 3—1 9
—broilers ...	0 8—1 0
Parsnips, per cwt. ...	4 0—5 0
Peas, French, per bag ...	4 0—5 0
—English, per lb. outdoor ...	0 3—0 6
Potatos—	
—Jersey, per cwt.... ...	— 10 0
—Spanish, per cwt. ...	5 0—6 0
—Canary Islands, per case ...	8 0-10 0
—Azores, per case	8 0-10 0
Tomatos, English, per box of 12 lbs.—	
—pink	8 0—9 0
—pink and white	8 0—9 0
—white ...	7 0—7 6
—blue	6 0—7 0
—Guernsey ...	8 0—8 6
Turnips, French, per doz. bun.	8 0-10 0

REMARKS.—The fine weather is helping to prolong the period of activity now being experienced in Covent Garden. All choice fruits, such as Grapes, Peaches, Nectarines, Strawberries, Melons and Figs, sell freely owing to the demands of Ascot and other functions of the London season. A few punnets of forced Raspberries are a novelty and sell well at high prices. Strawberries are increasing in quantity each day, but so far they have not been sufficiently plentiful to affect sales of other fruits as they usually do. Australasian Apples are a firmer trade at slightly higher prices. Some very good Cherries are now available from Italy and sell well. The first English Cherries are also on the market, but these early fruits do not compare favourably with those from Italy. English Gooseberries sell with difficulty even at low rates, prices being poor for even the best fruits, while small berries are almost unsaleable. Dutch competition in this section is keen. Mushrooms have been through a lean period; quantities are heavy and prices low, but at the time of writing, there is some slight improvement owing to a slackening in the supply. English Tomatos have been a steady trade, but there is now an easier tendency, although the price level is still good. The trade in Cucumbers is helped by the fine weather, and this department is active. French Beans sell with rather less freedom than previously, and at lower prices, the largely increased supplies of outdoor Peas being responsible for this. New Potatos sell fairly well at lower prices. Salads are plentiful and cheap, and green vegetable supplies are ample for requirements.

GLASGOW.

Cut flowers were again very plentiful last week, especially Irises and Pyrethrums, and although prices moved irregularly, the changes were small and unimportant. The last of the Darwin Tulips were poor in quality and only realised from 3d. to 4d. for 12's, and double white Narcissi were worth from 3d. to 5d. Sweet Peas varied in price from 3d. to 5d. for short stem bunches, and 9d. to 1s. 3d. for well grown flowers; Roses sold at 3s. to 4s. 6d. per dozen; Carnations, 2s. to 4s.; Irises, 2½d. to 4d. (6's); and 5d. to 6d. for specials; Anemones, 3d. to 6d.; Gladiolus Prince of Wales, 2s. to 2s. 6d. (6's); The Bride, 10d. to 1s. 2d. per dozen; Maiden's Blush and Blushing Bride, 1s. to 1s. 4d.; Poppies, 6d. per bunch; Gypsophila, 2d. to 4½d.; Lily-of-the-Valley (indoor), 1s. 6d. to 1s. 9d.; Lilium longiflorum, 3s. to 4s.; Nigella, 1s.; Lupins, 3d. to 4d.; Asparagus (medium), 1s. 3d.; trails, 2s. to 3s.

The first consignment of Southampton Strawberries reached the market on Saturday, and was sold at 2s. per lb., while Cheddar Strawberries fluctuated between 1s. 6d. and 2s. Home-grown Grapes were cheaper at 2s. 9d. per lb.; Melons, 4s. to 7s. each; Scotch Peaches, 1s. to 1s. 6d.; Apricots, 14s. per crate; Gooseberries, 3d. to 5d. per lb.; Cherries, 1s.; and Gages, 15s. to 22s. per box. Grape Fruits, which sold at 28s. to 32s. per case in the previous week, advanced to 30s. to 40s.

Tomato prices remained steady, Scotch selling at 10d. 1s. 2d. per lb., and Guernsey, 9d. to 10d. Locally-grown Lettuces were worth from 2s. 6d. to 3s. per dozen; Cucumbers, 5s. to 7s. 6d.; Radishes, 3s. 6d.; Asparagus, 3s. to 4s. 6d. per bunch; Syboes, 4d. to 5d.; Carrots and Turnips, 10d. to 1s. 1d.; and Mushrooms, 2s. per lb.

WEATHER IN MAY.

Unsettled conditions prevailed during the earlier half of the month of May, showers—mostly beneficial to all vegetation—occurring almost every day, while a few substantial falls of rain were measured. The sunshine records the while, were rather poor, and the weather was not warm; southerly winds were general. During the later half of May all was different, persistent, light, easterly winds producing numerous almost cloudless, but rather hazy, days, with considerable amounts of sunshine and high maximum temperatures, but practically no rainfall. For the complete month, the mean temperature was 52·7°, or 1·6° above the average. There were 245 hours, of sunshine—a surplus of 36 hours. Rain fell on 13 days, and the total was 1·96 inch, or only 0·25 inch below normal. No thunder occurred; two slight ground frosts, and one brief and very moderate gale, constituted all the occasional phenomena. *Joseph Baxendell, The Fernley Observatory, Southport.*

SCHEDULES RECEIVED.

HIGHFIELDS AND DISTRICT GARDENING SOCIETY, Leicester.—Twelfth Annual Show, at St. Philip's Parish Hall, Evington Road, Leicester, on Saturday, August 17, 1929.—Secretary, Mr. W. H. H. Green, 10, Ashbourne Street, Leicester.

THE ROUNDHAY (LEEDS) HORTICULTURAL SOCIETY.—Annual Floral Exhibition, in Roundhay Park (Sports Arena) Leeds, on Tuesday and Wednesday, July 16 and 17, 1929.—Secretary, Mr. William F. Kitchingman (Room No. 12), 8, York Place, Leeds.

ST. PETER'S, NORBITON.—Seventeenth Annual Flower and Industrial Show, on the Vicarage Lawn, on Saturday, June 29, 1929.—Secretary, Mr. H. Thomas, Warren Point, Gloucester Road, Kingston Hill.

HULL AND EAST RIDING ROSE SOCIETY.—Third Annual Exhibition, in the Central Hall and Annexe, Pryme Street, Hull, on Thursday, July 18, 1929.—Secretary, Mr. W. F. Proctor, 38, Tavistock Street, Hull.

GARDENING APPOINTMENT.

Mr. G. Warner, for the past six-and-a-half-years Head Gardener to the late Sir JOHN BRUNNER, Bart., of Sandiway House, Northwich, Cheshire, as Head Gardener to R. H. GILLESPIE, Esq., Dene Place, West Horsley, Surrey. [Thanks for 2s. for R.G.O.F. Box.—EDS.].

A TOO CROWDED ADVERTISEMENT WEARIES THE EYE; ONE WORD QUICKLY PERCEIVED IS BETTER THAN TWO NOT PERCEIVED AT ALL.

THE Gardeners' Chronicle

No. 2218.—*SATURDAY, JUNE* 29, 1929.

CONTENTS.

Abbiss, Mr. H. W. ... 472
Alpine garden—
  Dianthus squarrosus 475
  Gentiana Kochiana var. dinarica ... 475
Australian, South, forest activities ... 472
Crops, yield of, sunshine and 471
Edinburgh, notes from 473
Fruit garden—
  Tar distillate washes 479
"Gardeners' Chronicle of America," the ... 479
Gardens, Essex, open to the public in July ... 471
Hardy flower border—
  Lupinus polyphyllus var. Moerheimii... 478
  Salvia verbascifolia 479
Iris garden—
  Iris versicolor ... 475
Kew, notes from ... 473
Nomenclature of garden plants, rules and recommendations for the 477
Scotland, garden notes from South-west ... 475
Scottish Institute for soil research ... 471
Scottish Potato sales... 472
Societies—
  Cardiff Gardeners'... 482
  Cheltenham Floral Fête 480
  Guildford and District Gardeners' ... 480
  Royal Horticultural 481
Undergraduates, vacation employment of 479
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 476
Week's work, the ... 474

ILLUSTRATIONS.

Abbiss, Mr. H. W.... 472
Beschorneria yuccoides at Villa St. George, Torquay... 479
Gentiana Kochiana var. dinarica 475
Nomocharis Mairei var. leucantha and N. saluenensis at Edinburgh Botanic Garden 473
Ward's, Mr. F. Kingdon, tenth expedition in Asia, views of 476, 477

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 61·9°.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London. Wednesday, June 26, 10 a.m. (Greenwich time). Bar. 30·2. Temp. 59°. Weather, fine.

Sunshine and Yield of Crops.

As everybody knows, the chemical constructiveness of plants depends on sunshine. In the absence of light the green plant belies its name, remains colourless and, unable to make its sugars and other foods, dies of starvation. On the other hand, every gardener in this time of drought, knows that plants often find sunshine inopportune. They may have too much of a good thing, as witness in this spring and early summer how blossom has hastened away and how growth has been arrested. Evidently, therefore, if anyone were to ask what is the influence of sunshine on the yield of crops, a wise gardener, at all events, would hesitate before giving a confident answer. He would point out that the effect of sunshine depends on many other factors, the nature of the soil and the moisture of air and of ground. If all these other factors are sufficient, then bright sunshine will bring bumper crops; but if one or other be lacking the same bright sunshine may bring nothing but trouble. It is one of the disabilities under which gardeners labour that they cannot control the weather, and it is therefore a not infrequent cause of disappointment, for spells of sunshine, delightful to the human, are, or may be, disastrous to the vegetable. For this reason, if for no other, every gardener likes to have the control of some "glass"; for the possession of a glasshouse confers on him a large measure of independence of weather vagaries. Yet, despite numerous experiments, no certain and satisfactory means of supplying deficiencies of sunlight have as yet been devised. Temperature, both of soil and air, fertility of soil, movement of air—all these the possessor of a glasshouse may control. He may also mitigate the beams of sunshine, but until now he has not been able to make good their deficiencies. Yet, from the observations and experiments carried out at the Experimental and Research Station, Cheshunt, and reported* by Dr. W. F. Bewley, it would seem that there is a means, and that a curious one, of helping the plant to make the most of sunlight in periods when sunshine is defective. Dr. Bewley first ascertained that, as might be expected, Tomatos grown in this country under glass give the largest yields in years of brighter sunshine. The *annus mirabilis* of recent times, 1921, was, as most of us remember with regret, a year of bright sunshine. It was also the year of largest Tomato yields of any between 1917 and 1927. These records are the more trustworthy in that they apply to houses in two distinct districts, Cheshunt and East Grinstead. In the case of this crop it is the sunshine which occurs between April and August that counts in increasing crop production; before that it is of less importance. Now, as to the means of supplementing sunshine. From fertiliser trials carried out over a period of ten years, 1917-1927, and fully recorded by Dr. Bewley, it is quite evident that the addition of potash to the fertiliser applied to the plants enables the Tomato to yield better in years of poor sunshine than it otherwise would. Conversely, when the sunshine is plentiful the fertiliser which gives the best results is one which contains less potash and more nitrogen. Thus, a judicious balancing of these two fertilisers helps the grower to make the best of sunshine and of clouds. It would seem that these interesting observations might be usefully applied by gardeners who grow plants under glass, not only with respect to summer crops, but also with respect to those which mature during the shorter days of the year.

Essex Gardens Open to the Public in July.—The following Gardens in Essex will be open to the public in aid of the Essex County Nursing Association and other local nursing services during July, the charge of admission to each being 1s.: July 1, Hedingham Castle Keep (Mrs. Majendie); Moyns Park, Halstead (J. P. Walker, Esq.); July 3, Hill Hall, Epping (Lady Hudson); July 6, Faulkbourne Hall, Witham (Mrs. C. Parker); Braxted Park, Witham (Mrs. Boulton); July 13, Rookwoods, Sible Hedingham (Miss Sparrow); Dynes Hall, Halstead (Mrs. Gosling); July 17, Langleys, Great Waltham (Mrs. Tufnell); July 20, Terling Place, Chelmsford (Rt. Hon. Lord Rayleigh); Boreham, Chelmsford (Mrs. C. Pilkington); July 28, Short Grove Hall, Newport (Captain F. J. O. Montagu).

Scottish Institute for Soil Research.—At a meeting of the Governors of the North of Scotland College of Agriculture, held at Aberdeen on Thursday, June 20, the Research Committee reported that a communication had been received from the Department of Agriculture for Scotland forwarding the memorandum of the scheme for the establishment of an institute for soil research, to be called the Macaulay Research Institute, at Aberdeen, to be administered by an *ad hoc* Committee of eleven members, of whom three were to be nominated by the University of Aberdeen, three by the North of Scotland College of Agriculture, one by the Edinburgh and East of Scotland College, one by the West of Scotland Agricultural College, and three by the Department of Agriculture for Scotland, and that Dr. W. G. Ogg, M.A., B.Sc., is to be appointed Director of the Institute. Mr. T. B. Macaulay, President of the Sun Life Assurance Company of Canada, who is at present on a visit to Scotland, has agreed to undertake the whole cost of founding the Institute, not to exceed £10,000, subject to arrangements being made for meeting the cost of maintenance out of the public funds. One of the primary duties of the Institute is to investigate problems relating to peaty and moorland soils, but research in connection with other classes of soils is not to be precluded. The report was unanimously approved.

Imperial Botanical Conference, 1930.—At a meeting of the Executive Committee of the Imperial Botanical Conference (1924) held in London on January 18 last, it was decided to arrange a short Imperial Botanical Conference to be held immediately before the International Botanical Congress in 1930. The Imperial Botanical Conference, which it is intended should last only one day, will meet in London on Friday, August 15, 1930, at the Imperial College of Science and Technology, South Kensington, S.W.7. The agenda before the Conference will be purely of a business nature. The proposal to hold a further Imperial Botanical Conference in 1935, on lines similar to that held in 1924, will be discussed, and, if necessary, the appropriate organisation for convening the Conference will be arranged. Reports of the Committees which have dealt with the resolutions of the 1924 Conference will be received. Any other business which it is desired to lay before the Conference should be communicated to the Hon. Secretary of the Executive Committee, Professor W. Brown, Imperial College of Science and Technology, South Kensington, S.W.7, in due course.

Rose Show at the Hague.—From July 19 to 21, a Rose Show will be held in the Zoological Gardens at The Hague, Holland. The motto adopted will be *Nos Jugunt Rosae*, and it is expected that the event will be a very popular one, the Dutch people being devoted to flowers and especially to the Rose. Roses grow well in Holland, in spite of the loose and sandy nature of the soil, and many are exported to this country, where, however, they are not always successful, mainly owing to the great difference in the soil conditions between the two countries.

Sydney Botanic Garden Staff.—As the result of a ministerial visit to the Botanic Gardens in Sydney, New South Wales, last year, several employees at the Garden were either dismissed or de-rated (reports *Red Tape*, the organ of the N.S.W. Public Service Association). As both permanent and temporary men, of long service and with honorable records, were stated to be among those who received notice of dismissal, a member of the Association's Committee was deputed to make enquiries and prepare a report. The report was presented in December, 1928, and stated, among other things, that no opportunity had been given to the employees concerned to be heard in their own behalf, and no proper enquiry had been held by the Public Service Board. A deputation from the men was subsequently received by the Board, and it was hoped that a properly constituted enquiry would be granted.

Centenary Number of "La Revue Horticole."—Our French contemporary, *La Revue Horticole*, of Paris, is celebrating the centenary year of its foundation, and has issued a special centenary number containing much matter of great interest, both historical and horticultural. The paper was first founded as a quarterly journal, by the editor-proprietors of a former paper, now defunct, entitled *Le Bon Jardinier*. The first editors were Antoine Poiteau and André de Vilmorin, a name which is still famous as that of the great Paris nursery firm of Vilmorin-Andrieux et Cie. In 1845, the paper began to be published twice monthly, and so continued until 1914, when it ceased publication, to be resumed as a monthly journal in 1915. The centenary number is full of portraits of celebrated horticulturists who have figured in the history of the past hundred years, many of them now scarcely remembered except by the names they gave to flowers or fruits of their raising, such as M. Elie-Abel Carrière, M. Joseph

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"The Influence of Bright Sunshine upon the Tomato under Glass," by W. F. Bewley, D.Sc., *Annals of Applied Biology*, Vol. XVI, No. 2, May, 1929.

Decaisne, and M. Jules Gravereaux. Beside the historical articles, there are also monographs on various subjects by modern French specialists, and several coloured plates. The price of the number, which is additional to the ordinary monthly issue, is eighteen francs.

Proposed New Forestry Scheme for Scotland.—At a meeting of the Glasgow Corporation, held on June 13, a letter was read from Colonel Sutherland, Forestry Commissioner, containing a proposal by the Commission to feu the whole lands belonging to the Corporation at Loch Katrine, extending approximately to 24,128 acres and to afforest 7,000 acres under reservation of the water powers of the Corporation, and to pay an annual feu duty of £1,100, or such other sum as might be adjusted. By the casting vote of the Chairman, the proposal was turned down by the Water Committee, and after discussion this decision was upheld by a majority of the Town Council. The opposition to the scheme was based on the principle of dual control, which could not be permitted in the interests of the City and its water supply.

Scottish Potato Sales.—The first of the new season's crop of early Potatos was marketed the week before last from Drummore, in Wigtownshire, and digging started a few days later in Ayrshire, where the annual auction of growing crops of Epicure began on Wednesday, June 12. Favoured by suitable weather, the crops in the Girvan district have made good progress lately, and the tubers are of a nice size and quality. Although large areas had been disposed of privately, there was a large attendance of buyers and bidding was of a spirited character, especially for lots that were in a more advanced state of maturity. The highest price received so far was £70 per acre, while backward crops ranged from £29 upwards. At one farm the average price worked out at £47 11s. 0d. per acre, as compared with £40 4s. 0d. last year.

Legacies to Gardeners.—The late Miss Mary Burgate Winslow Fenwick, of Lingy Acre, Portinscale, near Keswick, who died on February 10, left £50 to her gardener, Mr. George C. Rowe.—The late Mr. Samuel Moore Segar, of the well-known florists' firm of Messrs. Wills and Segar, Ltd., who died on February 19, left £100 each, free of duty, to Mr. Corderey, Mr. A. C. Cook and Mr. Woollven, if in the employment of Messrs. Wills and Segar at the time of his decease.—The late Sir Alfred Jodrell, Bt., of Bayfield Hall, Holt, Norfolk, who died on March 15, 1929, left a house and garden at Sharrington to his gardener, Mr. James Michael Pointer, for his faithful service to him.—The late Mr. James Gallaher, of Malone Park House, Belfast, who died on February 4, 1929, left £100 each to his gardener, Mr. David Barr, and his gardener's assistant, Mr. W. Campbell.

South Australian Forest Activities.—Afforestation in South Australia receives considerable attention in Government circles, much greater, indeed, than is accorded it in any other State of the Commonwealth, and the Annual Report upon State forest administration, which has just been made available by the Commissioner of Forest Lands (Hon. John Cowan) indicates that continued progress is being made. The returns cover operations up to June 30, 1928, at which date the area of State forests was 200,005 acres. An additional 50,000 acres, however, had been purchased and was in progress of dedication, and it was further anticipated that from time to time the total area would be augmented. During the year, 6,866 acres had been enclosed and planted with softwoods. This was an advance over the previous year's performance of 2,623 acres. The maximum planting area, as laid down under agreement with the Commonwealth Development and Migration Commission, has now been attained. Necessary preliminaries for future operations were carried out, and included the raising of 6,425,391 seedlings in the nurseries, the clearing of 6,722 acres, completion of the work of fencing, and pre-pitting of the area for planting. During the twelve months under review, the Commissioner paid several visits to forest reserves, and conferred with his officers on various aspects of the operations. An important decision was to adopt the system of pre-pitting for planting, which has resulted in substantial economy without sacrificing efficiency. It was also resolved to increase the afforestation activities at Kuitpo, about thirty miles south of Adelaide. Mr. A. T. Gibson, Conservator of Forests at Lahore, India, inspected several of the State plantations, and was greatly impressed with the work of the Department.

Mr. H. W. Abbiss.—Mr. Abbiss, the Horticultural Superintendent for Cornwall, comes from an old horticultural stock, as his grandfather was a member of Sir Joseph Hooker's Australian Expedition. He received his earlier education at Tiffins School, Kingston-on-Thames, and at an early age showed such keenness for the horticultural profession that he won a Surrey County Council horticultural scholarship, tenable at the Royal Horticultural Society's Gardens, Wisley. At the end of his studentship at Wisley he was granted his diploma with distinction, and was offered a temporary extension of his scholarship for research work. The practical side, however, made a strong appeal, and he left Wisley to take up a journeyman's position in Norfolk, after a short commercial experience in Surrey. He was eventually appointed outside foreman under Mr. H. Naylor, at Lady Battersea's famous gardens, at the Pleasaunce, Overstrand. This position he held for four years prior to the outbreak of the war. He served with the colours from 1914 to 1919, being recommended on four occasions for gallantry in action; he was awarded the D.C.M. twice, and also the Military Medal; he was also wounded. After the armistice he acted as an army horticultural lecturer, returning to Overstrand in 1919, and taking charge of the glass department. It may be noted, in passing, that Mr. Abbiss was one of the first to take the examination for the National Diploma in Horticulture, which qualification he holds. In February, 1920, he became lecturer in horticulture to the Devon County Council, and this position he held until appointed by the Cornwall County Council as Horticultural Superintendent, in April, 1923. During his term in Devonshire, he did valuable work in connection with orchard renovation and the cider industry. His greatest success has, however, been achieved in Cornwall, where, realising the horticultural potentialities of the county, he has done much to improve and extend the commercial side of the industry which has its strongholds in the Tamar and Fal Valleys and on the Penzance peninsula. A recent commercial, educational exhibit, staged at the Royal Horticultural Society's hall, demonstrated what the Cornish climate produces early in the season. Mr. Abbiss originated the Commercial Spring Flower and Broccoli Show, the Soft Fruit Show, and the Dry Bulb Show of the west, the aim throughout being to improve and raise the standard of growing and marketing, to extend the area under these crops and to advertise Cornish produce. His posters of unique design in connection with this work are now well-known. Other achievements include the setting up of co-operative bulb sterilisers (one of which has already treated two hundred tons of bulbs), and the initiating of experiments in the export of Cornish Broccoli (in conjunction with the Ministry of Agriculture) to the continent under the National Mark Scheme. Working under the chairmanship of the Rev. A. T. Boscawen, V.M.H., Mr. Abbiss has received every support from the members of his committee, who have supplemented his staff to meet the increased demand for horticultural education. Although the commercial side of his work takes priority, Mr. Abbiss's duties embrace lecturing and demonstrating to all classes of growers, Women's Institute members and teachers, advisory work by visit and letter, landscape work (roadside planting, laying-out school grounds and playing fields, and the keeping of open spaces), and the supervision of school gardens. Many shows are also visited and demonstrations given in manual processes. Mr. Abbiss is also responsible for the management of several experimental stations and outdoor trial work, which obtain the best and latest information for the benefit of the industry. Through the agency of these stations many improvements have been brought about, a good example being the way in which the Broccoli industry of Cornwall has been put on a sound footing by the introduction and distribution from these stations of the Roscoff Broccoli. This has been the means of bringing an additional £10,000 into the county during the past season.

MR. H. W. ABBISS.

Mr. E. H. M. Cox to Lecture in America.—We learn that Mr. E. H. M. Cox, the Editor of the *New Flora and Sylva*, is to make a short lecture tour in America during the latter part of the present year. It is stated that his first lecture will be given at the Horticultural Hall, Boston, on October 22, under the auspices of the Massachusetts Horticultural Society.

Appointments for the Ensuing Week.—MONDAY, JULY 1: Harrogate and District Horticultural Association's meeting. TUESDAY, JULY 2: National Sweet Pea Society's Exhibition (two days); Royal Caledonian Horticultural Society's meeting; Peterborough Agricultural Society's Show (three days); Post Office Savings Bank Horticultural Society's Exhibition. WEDNESDAY, JULY 3: National Carnation and Picotee Society's Show; Brighton, Hove and Sussex Horticultural Society's Show (two days); Rotherham and District Horticultural and Chrysanthemum Society's meeting; Gainsborough Allotment Holders' Society's meeting. THURSDAY, JULY 4: Newport Horticultural Society's Rose Show; Bideford and District Horticultural Society's meeting; North-east Coast Exhibition (three days). FRIDAY, JULY 5: National Rose Society's Show (two days); British Delphinium Society's Show. SATURDAY, JULY 6: Leigh-on-Sea Horticultural Society's Show; Leeds Paxton Society's open exhibition night.

"Gardeners' Chronicle" Seventy-five Years Ago.—*How to Destroy a Noble Tree, as practised in all our public Parks.*—Take any tree (particularly a slow-growing, valuable one), measure no more than twenty feet from its bole, and then plant a Horse Chestnut or other quick-growing tree in every direction around; in a very few years the ends of all the branches will begin to decay, and in a comparatively short time you will see the last of your fine old tree, especially if, after a severe winter, you carefully abstain from cutting out any dead wood whatever. That I am only stating facts, anyone who will go into the Kensington Gardens or Hyde Park may satisfy himself. *A Constant Subscriber. Gard. Chron., July* 1, 1854.

NOTES FROM KEW.

It is remarkable the number of plants that have withstood the severity of the past winter, and the profusion of blossom that is being exhibited, although much of it appears to be short-lived compared with that of former seasons. In the rock garden many plants were cut to the ground owing, undoubtedly, to the lack of snow. The Androsaces, however, appeared to benefit by it, due to the absence of the usual London fogs and damp weather, and among those which have been exceptionally fine this spring are A. carnea, A. lanuginosa, A. primuloides and A. sarmentosa.

Among the Meconopsis, the tale is one of woe, for many of the short-lived sorts failed to come through the winter. One plant of M. grandis—it lost its brethren—sent up a stalk carrying the most beautiful blue Poppy flower. M. betonicifolia var. Baileyi has been for the past fortnight a great source of attraction, along with that charming little species, M. quintuplinervia, which hangs its lavender-blue bells singly from the apex of slender stems which arise in numbers from a central root-stock. Of the other blue-flowered species, M. aculeata and M. racemosa have made quite an attractive display, the former especially in the wild garden. M. integrifolia, the only yellow species to flower, has done so with exceeding charm.

Primula aurantiaca, now in flower, is one of the finest decorative Primulas of its kind. It is a wonderful plant, for it flowered profusely late last autumn and is now once more a carpet of golden-yellow on the ledge where it is planted. P. secundiflora, P. sikkimensis, P. chungensis, P. Veitchii, P. Bulleyana, P. pulverulenta, P. Cockburniana, P. involucrata, P. Menziesii, P. Wardii, P. chrysopa, P. microdonta var. violacea, P. × hybrida, and that charming hybrid P. Edina, are now almost at their best.

The Onosmas also appear to have benefited by the dry winter, for O. tauricum, O. stellulatum var. helveticum, O. echioides and O. albo-roseum are now flourishing as if in their native habitats.

The Saxifragas in flower are very fine and exceptionally clean, due largely to the absence of heavy winds and rain. S. Aizoon and its varieties balcana, baldensis, laeta and notata; S. cartilaginea, S. cochlearis and the hybrid of the latter two, along with S. × Gaudinii, S. × Timbalii, S. longifolia and S. Cotyledon, and a host of "mossy" Saxifragas, are making the rock garden look quite bright.

There are also quite a number of Pentstemons in flower, including P. Scouleri, and its variety alba, P. confertus, P. Menziesii, P. Eatonii and P. glaber, a form of the latter being particularly graceful, of upright habit and with blooms of a lovely shade of azure-blue, bluer far than the best Veronicas, of which there are now numbers in flower. The Aubrietias and dwarf-growing Gypsophilas are very attractive, along with Phlox subulata and its varieties, P. Stellaria and P. Douglasii, the last two very bright. Dodecatheon Meadia, D. Lemoinii, and others are very vigorous, carrying showers of star-like flowers on rigid stems, while Haberlea rhodopensis and H. virginalis, along with Ramondia pyrenaica and its variety alba, R. serbica and R. Nathaliae, are now a picture as they hang from the crevices between the rocks, sending out their dainty blue and white flowers most luxuriantly. R. Heldreichii, better known as Jankaea Heldreichii, has also flowered with us this year, but that is finished and now there is only hope of procuring seeds in the autumn. Another treasure that has flowered freely is Wildenia candida, which has produced its lovely, waxy-white flowers well above the soil and has made quite a startling little show.

In the damper places, Cypripediums are very fine, notably C. Calceolus, C. pubescens and C. spectabile, the latter being a wonderful picture in the small bog in the rock garden.

Achillea Kellereri, A. sarracinica, A. Griesbachii, A. conjuncta, A. argentea; Alyssum spinosum and its variety roseum; Eriogonum umbellatum and E. sub-alpinum, the creeping Cerastiums and Arenarias; Silenes, Antennarias, Dianthuses, etc., are all now nearing their best, and provide a splendid mass of colour.

Among the scarcer alpine plants, Omphalodes Luciliae has, perhaps, made the most remarkable recovery, and its foliage and flowers seem all the better for the winter's freezing. Tanakaea radicans is now quite attractive, although never a startling plant. Bruckenthalia spiculifolia, with its charming pink flowers and Heath-like foliage, is well worth cultivating in the rock garden, as it makes a lovely show. Silene Hookeri, its first flowers now passing over, has been very showy and of good rich colouring this year, and with the remainder of the summer in front of it, there are hopes of obtaining plenty of seeds. Geranium Farreri has been a picture; although shifted and grouped together in the early spring, it has flowered magnificently and is now in a flourishing condition. Matthiola valesiaca is a plant well worth growing in a sunny position, for it is now smothered with lilac flowers, the bushy plants being fifteen inches in height. The Lithospermums received a severe check, but are now recovering in a startling manner and, along with the Wahlenbergias, Campanulas, etc., are lending the necessary tints of blue to complete the picture. *A. Edwards, Kew.*

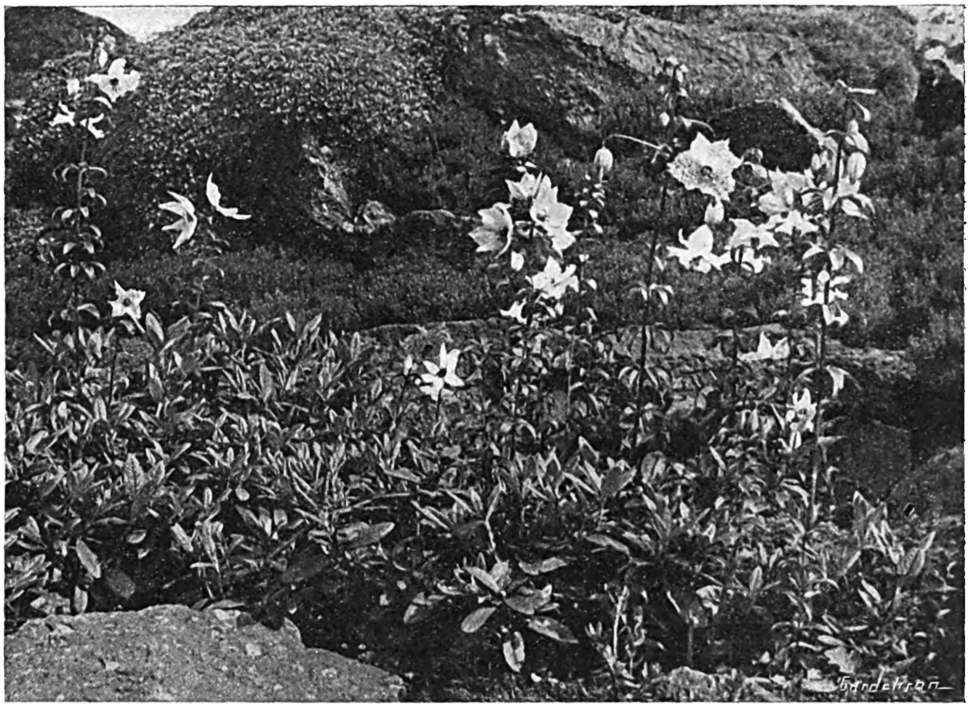

FIG. 238.—NOMOCHARIS MAIREI VAR. LEUCANTHA AND N. SALUENENSIS, GROWING AMONG RHODODENDRON SANGUINEUM AT EDINBURGH BOTANIC GARDEN.

NOTES FROM EDINBURGH.

All classes of plants out-of-doors have been benefited to a large degree recently by welcome showers and periods of bright sunshine. The garden generally has a very fresh and healthy appearance, and many plants have attained a high standard of flowering perfection, some even surpassing past records. This is true of genera like Rhododendron, Primula and Meconopsis.

The rock and wild gardens at present cater for the modern plant lover and are the chief centres of attraction. New and rare plants in flower are eagerly sought after, and much attention is given by visitors to such as may here be termed uncommon plants. The genus Nomocharis has, since the first flowers opened, had numerous daily admirers. N. Mairei var. leucantha and N. saluenensis (Fig. 238) are seen growing side by side among a clump of Rhododendron sanguineum. They seem to be quite at home here, and desire this form of cultivation, producing robust stems with some wonderfully elegant whorls of beautiful flowers. Other species of the family are equally attractive plants. N. pardanthina with rose-tinted, drooping flowers, and the variety Farreri, with dark brown spots on the inside of the petals, are very conspicuous among various Primulas and Meconopses.

Another member of the group, N. nana, only attains a height of a few inches. From its habit and dull pink coloured flowers, it may be termed a less beautiful species than those already mentioned, but is, nevertheless, an admirable plant for growing among dwarf Rhododendrons in some nook in the rock garden. This species also is of easy culture, and seeds, when sown, give a high percentage of germination.

Among the countless members of the Primula family, P. microdonta var. violacea is of outstanding merit. This fragrant form is most attractive now with violet-purple, nodding flowers thickly powdered inside with meal and giving them a waxy appearance. In the damp and coolness of the bog, P. flexilipes from western China is superb, with soft, lemon-yellow flowers, borne on delicate, slender stems, and another worthy subject from the same country, P. chrysopa, is in excellent bloom. P. Menziesiana, with rich, velvety-blue flowers, has again kept up its reputation as one of the most beautiful and attractive members of the Order. Ramondia pyrenaica, generally grown in shade on a northern aspect, has established itself on the lower half of a perpendicular dry wall facing south.

High up on a mound facing south, a few healthy plants of Aster Forrestii are in full vigour. The ray florets are of a beautiful blue colour, narrow and delicate, and with the addition of a bright yellow centre; it is a very desirable rock garden plant.

Scree plants are making rapid growth and many are in full flower. Among those of special note, Silene Hookeri from California looks happy, and shows some fine, delicate pink flowers.

The wonderful little Lychnis alpina looks at home, and is producing good spikes of bright red blooms, while a large patch of Silene pumilio clings close to the limestone and its large pink flowers nestle among the grassy foliage. Wahlenbergias also have done well. W. tenuifolia var. caricina and W. Pumilio are equally established among the stones, and many pretty, blue, Campanula-like flowers lend beauty to the surroundings.

Omphalogramma elegans growing in a damp situation is one of the best of the group. Some fine dark purple flowers opened on many specimen plants. Others of the section, *i.e.* O. vinciflorum, and O. minus, have passed out of flower.

By the pond side, drifts and masses of Primulas and Meconopsis in full bloom give a very fine colouring effect. *A. McCutcheon.*

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Selenipediums.—Members of this attractive genus of graceful Orchids have been making a fine display of flowers for many weeks. As the plants pass out of flower any that require fresh rooting material should receive attention, and repotting should be done if the plants are overgrown, or the rooting material impoverished. Robust growers, such as S. macrochilum var. giganteum, S. grande, and the varieties of S. caudatum, are best grown in pots, while pans may be used for the slender-leaved varieties, such as the dainty S. Schlimii and S. caricinum. In all cases, ample drainage should be provided, as, when established and in full growth, these Orchids require copious watering each time the soil approaches dryness. A good compost is essential, and should consist of fibrous loam, A.1. fibre and chopped Sphagnum-moss, adding crushed crocks or charcoal for porosity. Pot them moderately firmly, keeping the base of the plant slightly below the pot rim, and surfacing the compost with fresh Sphagnum-moss; this, however, should not be built up about the growths, or the danger of the latter damping off after repotting will be increased. Ample room should be left for the necessary heavy waterings required later on. If the compost is moistened through, very little water will be needed for some weeks, for at this stage the growths quickly decay if too much water is given, and the whole plant may be lost. Afterwards, when roots and growths are well advanced and growing freely, more water is necessary, and more light should be allowed to reach the plants to assist in the production of good flowering growths. Selenipediums thrive well in a moist and buoyant atmosphere at the warm end of the intermediate house, but careful attention with regard to shading and watering is necessary after root disturbance. Should the plants become infested with thrips, dipping the growths in a safe insecticide is the best remedy, afterwards tilting the plants to allow the moisture to drain away.

HARDY FRUIT GARDEN.

By HENRY H. COOK, Chief Assistant Lecturer, Reading University Horticultural College.

Protecting Fruits on Walls.—The nets for the protection of Cherries, etc., should be placed in position early enough to prevent birds from attacking the colouring fruits. The nets should be secured top and bottom, and held away from the trees by the aid of forked sticks eighteen inches or so in length; otherwise the birds may alight and peck the fruits through the nets. Earwigs, too, are a source of trouble to all wall fruits, for they eat the skin of the fruit while it is green. This pest favours a dry position, and will seek shelter in any dry place during the day, and feed at night. Small pots filled with soft moss and placed among the branches will entice the earwigs to shelter in them during the daytime. Bamboo canes, or pieces of Broad Bean haulm, cut into short lengths are also employed as traps. These traps should be examined daily and the earwigs shaken into a vessel containing some oily mixture to destroy them.

Watering.—Fruit trees on walls are rarely supplied at the roots with all the moisture and food they need to bring their crops to the fullest fruition. They are quite frequently starved at the roots by having herbaceous plants and other perennials planted close to them, the roots of these taking most of the nutriment and nearly all the moisture within their range. Even in a wet season the soil nearest the wall is generally on the dry side, and should receive an occasional soaking through the hose-pipe. This year the weather has been extremely dry (we registered less than four-and-a-quarter inches in the first five months), and there may be a danger that, in the stress of other work, this question of moisture may be overlooked. Fruit trees planted this spring should not suffer through lack of moisture and mulching, which should be renewed so often as necessary. Layered Strawberry runners, too, should be kept moist while rooting if good plants are to be secured.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Colonel SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Plums.—The fruits upon the earliest Plum trees will be approaching ripeness, and although syringing must not be discontinued entirely, clean and soft water only should be used with caution. A thorough syringing with soft water, to wet the fruits completely, will not injure the "bloom" up to the time of ripening, but if free from insects and well cultivated, early varieties should now ripen perfectly; where damping is the only way of producing moisture, clear water only should be used. Late varieties, such as Golden Drop, should be sufficiently advanced to receive liberal quantities of liquid manure and rich top-dressings. Keep the growths pinched closely and free from insects. Trees upon trellises may be tied in and strong shoots stopped.

Melons.—Fresh young Melon plants should still be kept at hand for use as vacancies in pits and frames occur. Seeds germinate freely after this date and the best results are obtained when the plants are put out very early, and, as the houses will be required later for winter Cucumbers, etc., the growth of these Melons should be hastened so much as possible. Melon culture after May is easy enough, the main requirements being a good bottom-heat; sound loam and old lime-rubble as compost, and careful attention to airing and watering. Plants will then go forward to the finish without a check, the foliage will not ripen before the fruits, and the latter will be of good quality. Frame culture of Melons in the autumn requires very careful attention. The compost should always be on the poor side, as it is much easier to feed the plants than to repress strong growth. The bottom heat should be kept steady, especially when the fruits are setting, as a mishap at this period will not only cause loss of time, but may throw the plants into gross growth. June has been all that could be desired, and the Melon plants have made rapid progress, but the weather may change, and it is important that the manure linings are kept in good order, and mats are placed on the frames at night.

THE FLOWER GARDEN.

By R. FINDLAY, Keeper of the Gardens, R.H.S. Gardens, Wisley, Surrey.

Alpine Plants.—The early-flowering alpines have now made sufficient growth to provide a supply of cuttings. Where an increase in quantity is required, it is desirable to prepare a frame for them, but if only a few plants of each sort are wanted, the cuttings may be inserted in pots filled with a sandy compost, and stood in a cold frame and shaded from bright sunshine until rooted, or under bell-glasses in prepared beds in the open, preferably in a position with a northern aspect. The latter is the more satisfactory method, requiring very little attention until the rooted cuttings are ready to pot on. The compost for such should be several inches deep, of an open, porous nature, and composed principally of sand and old loam, with little or no leaf-soil. A bed of pure sand may be used with advantage, provided immediate attention can be given to potting on so soon as the cuttings are rooted. If the frames are placed in full sun they will require shading, using tiffany or some such material rather than lime wash, as the latter cannot be removed temporarily during dull weather. Keep the frames close until there are signs of growth then gradually admit air, increasing it as the cuttings become rooted. Cuttings of Phloxes, Alyssums, Aubrietias and other early alpines, if inserted now, will make useful plants by early autumn.

PLANTS UNDER GLASS.

By T. PATEMAN, Gardener to Sir CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Plumbago capensis.—This is a very useful plant for grouping in the conservatory during late summer, blossoming as it does when flowers are none too plentiful. Plants that were propagated last season should now receive their final shift into eight- or nine-inch pots. After this operation the flowers should be pinched off during the next six weeks or so with a view to securing a good display later on. This subject is not particular with regard to soil, but it thrives best in a light, open compost. The plants should be grown in a cool greenhouse, and should be syringed at least once a day to keep red spider in check, which pest is very partial to this plant. When the specimens are approaching the flowering stage the roots may receive liberal doses of liquid manure and soot water, and an occasional dressing of a good fertiliser.

THE KITCHEN GARDEN.

By W. G. STAWARD, Gardener to LADY MARGARET RYDER, Knowle Gardens, Dunster, Somerset.

Tomatos.—These are now growing freely and should be tied up and have all side-shoots pinched out. When the plants have set four or five trusses of fruits, the tops may be pinched out to check vegetative growth, and so assist the fruits to swell and ripen. Liquid manure should be applied once a week until the first fruits commence to ripen, when the applications should cease.

Mulching.—Should the weather continue to be dry, and if plenty of mulching material is available, Runner Beans, Peas, Onions, etc., may, with advantage, receive a liberal mulching between the rows. These crops should also receive heavy soakings of clear water at regular intervals.

Broccoli—These should be planted at once if good, strong plants are to be obtained by the autumn. Should the ground be dry and rain is likely to occur, it is advisable to defer the planting until the ground has been moistened by rain.

FOR NORTHERN GARDENERS.

By JOHN HILL, Gardener to ANDREW ARTHUR, Esq., Rosemont, Monkton, Ayrshire.

Vegetables.—In certain districts Onions are often attacked by mildew, which soon plays havoc with the crop if measures are not taken at once to check it. Where it has appeared in former years, preventive spraying with lime-sulphur should be carried out, and the same course adopted when an outbreak occurs. Leeks sown in frames should now be ready for planting out, and should be attended to at once. Heavily manured and well cultivated ground is necessary, and as Leeks constitute one of the main winter crops, some little trouble should be taken with them. Where there is difficulty in wintering Broccoli owing to frost damage, they should be planted in a plot which has not been cultivated or broken up in any way, in holes made with a crowbar, if necessary, and filled with old potting soil to give them a start. The resultant growth will be so firm that even the severest weather will not affect the plants.

Gooseberries.—These should be watched carefully for caterpillar and mildew. For the former, dust with Hellebore powder, or with Katakilla at the first appearance of the pest. For mildew, spray with lime-sulphur, one part to one hundred parts of water.

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

Anemone demissa, choice member of a charming genus, was collected in the Himalayas and named by Sir Joseph Hooker some eighty years ago, yet it seems to have fallen out of cultivation in private gardens, and I can find no reference to it either in plant catalogues or works on horticulture. Some kind friend must have sent me two plants of it a couple of years ago, and it has proved a valuable acquisition. From a flat rosette of deeply lobed leaves it sends up, in mid-May, sturdy stems bearing clusters of five or six white flowers, each with a centre of golden anthers. The blossoms are fully expanded by the time these stems are six inches high; but before they fade they are held aloft at a height of eighteen inches or two feet, and the leaves also rise from lying flat on the ground, a position which, I suppose, earned this Anemone its specific name. The sepals are of a strong opaque white, compared with which those of the mysteriously named A. narcissiflora seem almost dingy; but those of A. rupicola stand comparison very well with this newcomer to my border.

Humbler in stature than A. demissa, but with flowers double the size, A. rupicola is an equally attractive Windflower. Reginald Farrer was as relentless in condemning what did not take his fancy as he was lavish in praise of what pleased him. It is difficult to understand his classing A. rupicola among species which he dismisses as "obscure, indistinct, and of no great value," for its cheerful white salvers surely entitle it to kindlier notice. Referring again to A. demissa—it demands a moist root-run, and is apt to shrivel in a dry border or rockwork shelf.

Most Rhododendron species have flowered abundantly in our district this year, with the notable exception of R. arboreum and R. barbatum, reacting from their profusion in 1928. The prolonged cold of the past winter and early spring was beneficial in retarding growth on those species which, starting into growth early, often suffer sadly from late frosts. These are now full of promise for next year. Grateful as we must feel for the brilliant warmth we have enjoyed in June, it shortens sadly the display of late-flowering species and hybrids; but the gorgeous colours of R. Roylei and R. villosum are only revealed when viewed against the sun. It is well, therefore, to plant them clear of other growths. The hue of the flowers of R. villosum is often decried as crude magenta, and it is true that it varies considerably in different specimens; but the effect of a richly coloured bush with the sun shining through its crowded blossoms entitles this species to high rank in the 'Triflorum' series.

Among June-flowering Asters there are many inferior and none superior to A. Forrestii, which I had lately the privilege of viewing in the Edinburgh Botanic Garden in company with its discoverer. Its fine, flat flowers are borne erect on twelve-inch stems, the soft lavender of the ray florets contrasting admirably with the golden disks. *Herbert Maxwell, Monreith.*

ALPINE GARDEN.

GENTIANA KOCHIANA VAR. DINARICA.

This plant is now known as a variety of G. Kochiana, Perr and Sorg, along with G. exisa, etc., and if the whole series be grown, it will quite readily be seen there is but very little to distinguish the various forms found throughout the European highlands. The variety known as dinarica (Fig. 239) is stated by the late Reginald Farrer (*The English Rock Garden*), to be somewhat scarce, being confined to a small area in Bosnia and one or two places on the eastern flanks of the Alps. The leaves are, as a rule, rather smaller than those of G. Kochiana or G. exisa, and a little more diamond-shaped; but then, should a batch be raised from seeds, or grown in a sheltered position, this character may, probably, be found to be variable. The outstanding difference, perhaps, between G. Kochiana and its variety dinarica is the lack of spots in the corolla throat of the latter, which is of the brightest blue, with greenish bands on the outside, rather longer and more cylindrical than those of its allies, being upwards of three-quarters-of-an-inch in diameter and borne on stems of one to two inches in length, varying under differing conditions.

These Gentians will be found to do best in gritty soil, where they will not obtain too good a living and so tend to reproduce themselves by seeds rather than vegetatively, as so often happens in areas surrounding our larger towns. *A. Edwards, Kew.*

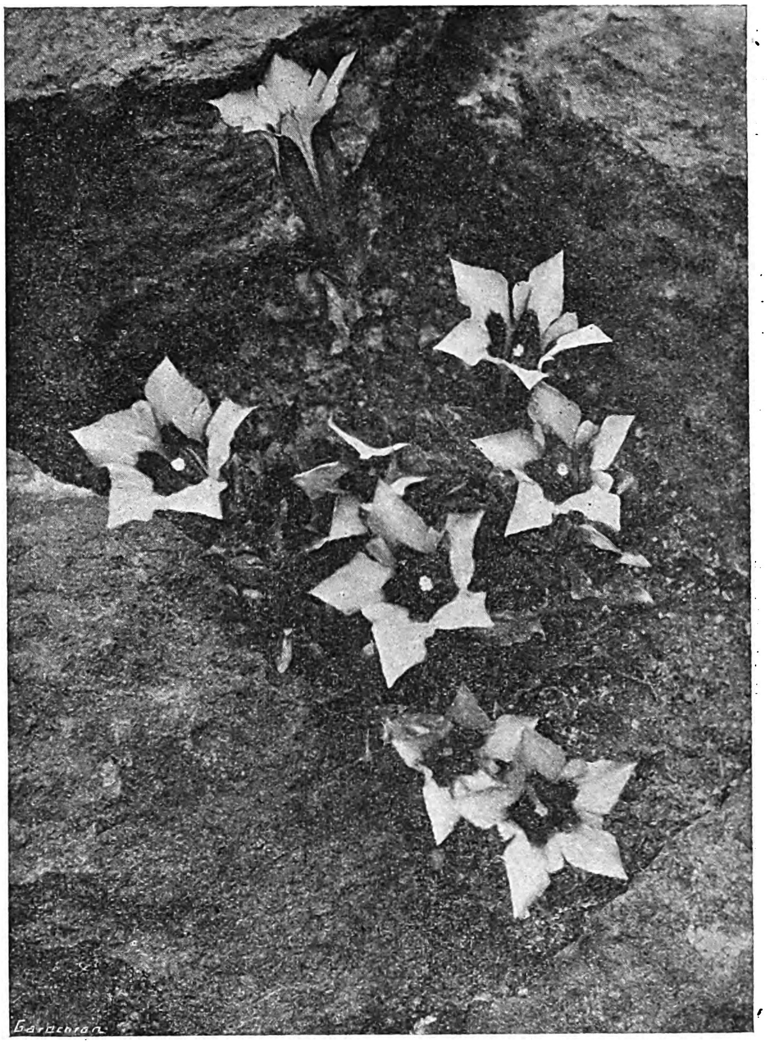

FIG. 239.—GENTIANA KOCHIANA VAR. DINARICA.

DIANTHUS SQUARROSUS.

This dwarf Pink from Russia and Siberia is an old favourite among alpine gardeners, for it is one of the easiest to grow, is of compact and tidy habit, and every year produces, during June, its crop of beautiful flowers above a compact mound of grey-green, slender, stiff or recurving, pointed leaves.

The flowers are of a lovely, clear, pure white, sometimes tinged with pink, and the petals are very finely cut, so that the mass of flowers produces a flimsy and lace-like effect, the blooms being borne either singly, or in clusters of two or three, on slender stems eight or nine inches high.

D. s. var. nanus is a desirable dwarf and compact variety, carrying its flowers on stems barely six inches in length, and there are several other minor forms, which have been named at various times.

D. squarrosus is a good grower and very accommodating, and may be planted either in rock crevices or in beds or rock pockets, its only requirements being sunshine and a well-drained root-run, in stony, light, loamy soil. *M. W.*

IRIS GARDEN.

IRIS VERSICOLOR.

The American Iris versicolor makes a gay display of colour during the months of May and June. It occurs abundantly in this locality, inhabiting wet meadows, marshes and the banks of streams; and is sufficiently attractive to make it a worthwhile subject for similar situations in the garden. Attaining a height of from one-and-a-half foot to three feet, the flowering stems are usually branched above, and forked near at the base. The erect, sword-shaped leaves are shorter than the flower stems and are slightly glaucous.

The flowers are violet-blue in colour, variegated towards the centre with green, yellow and white. They are short-pedicelled, with the spathulate outer segments two or three inches long, and the flat petals about half that length. The perianth segments are glabrous and crestless, and the perianth tube is much shorter than the obscurely three-lobed ovary, which has three cells, each containing two rows of seeds.

Iris versicolor enjoys a wide distribution on the Continent of North America, being found from Newfoundland to Manitoba, and southward to Florida and Arkansas. It was introduced to England so long ago as 1730, and is figured in the *Bot. Mag.*, t. 21,703. *T. H. Everett, New York.*

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the **PUBLISHER, 5, Tavistock Street, Covent Garden, London, W.C.2.**

Editors and Publisher.—*Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER ; *and that all communications intended for publication or referring to the literary department, and all plants to be named should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

XXIV.—AT CAMP V.

SO at last we were within striking distance of the Alps! During the next week, before the monsoon flooded us, we explored the ridge. It was no easy stroll to the alpine region, for the ridge twisted and bent, dropped down, climbed up again, and was frequently shattered; but there was a hunters' path all the way. Rhododendron Roylei was in fine bloom all along the rockier crest of the ridge, its colour varying from tawny orange to a flushed brick-red; and with it was the purplish-flowered shrub, like R. tephropeplum (Fig. 242). Among the Bamboos, irregular mounds of dark green, from which peeped flakes of rusty red wool and clusters of succulent crimson bells, suggested R. haematodes. The pink 'Barbatum' was still in full bloom, and scattered among it was the big-leafed 'Barbatum' whose stems are clothed with the persistent bud scales of years. I first noticed this species in the Tsangpo Gorge in 1924. In 1926 I found it in the Seinghku valley, and obtained seeds. Now, at last, I saw it in flower, and a splendid plant it is. The flowers are a vivid carmine-crimson without spot or blemish, tightly crammed into big, round heads; and the breaking of the leaf buds is an event, for the long, thin bud scales spurt out in a pink fountain which never ceases to play until the leaves expand.

Higher up the ridge, where the stout Fir trees grew further apart, much of the undergrowth was composed of a bushy 'Thomsoni' Rhododendron, just opening its glossy, scarlet bells in peals of five; at the base of the corolla are five circular jet-black glands, recalling another Tibetan species named Coals-of-Fire. Then, as the uppermost Abies forest was approached, one brushed through thickets of 'Sanguineum,' glowing duskily in the hollows, and tramped over tuffets of purple 'Saluenense' on the windy tops; and so to the Alps. Other species on the long ridge were the peevish-yellow R. trichocladum, and a 'Brachyanthum' with small flowers of an uncertain plum-juice colour. Most remarkable of all however, was the scarlet 'Neriiflorum,' which in the middle forest remained in flower until June was nearly spent, having then been in bloom for two months.

But Rhododendrons, although the most numerous, were not the only trees and bushes in the forest. Even on the ridge were species of Enkianthus, Rowan, Viburnum Wardii, Clethra, an Ilex rather like I. dipyrena, and Acer. In the gullies were many fine trees of Magnolia globosa, which flowered in the middle of June. In the Seinghku valley, where I first met with it, Magnolia globosa was no more than a bush or large shrub, its leaves glistening with long, champagne-coloured, silky hairs, and it flowered shyly. Here, as in Sikkim, it was a stout tree, but leaves and shoots were much less hairy than the Seinghku form, and it flowered freely. The flowers are globular, not opening widely, snow-white with purple anthers, and half pendent. Although M. globosa lacks the splendid foliage of M. rostrata, the flowers are quite as large as those of that species, and much more easily seen among the leaves.

There were a great many small shrubs scattered in the forest, amongst others Ilex Pernyi, Berberis Wallichiana, species of Deutzia, Ribes, Cotoneaster, Euonymus, Lonicera and Rosa, this last having small, pink flowers and smooth, scarlet, flask-shaped fruits.

Where the rock foundations of the ridge burst through the forest lining, the barren-looking cliffs harboured Primulas and other rock plants. Wedged into crevices, so far out of reach as it could shrink, was a tiny 'Auriculata' Primula, with purple, starry flowers, single or in pairs, clasped by toothed, spoon-shaped, mealy-white leaves; and at the cliff-foot, wherever there was a little free earth grew a comely 'Denticulata' with mop heads of mauve flowers. I collected seeds of this in the Di Chu valley in 1926 (probably K.W. 7,133) and now that I have seen it in flower I can commend it. Thirdly, there was a Muscarioid Primula with a miniature mop of violet flowers dimmed with white meal; a gentle, downy creature, well-meaning but without distinction. All these three were children of the Alps which had strayed along the ridge like lost sheep and seized on the freehold of these unoccupied waste lands in the forest estate.

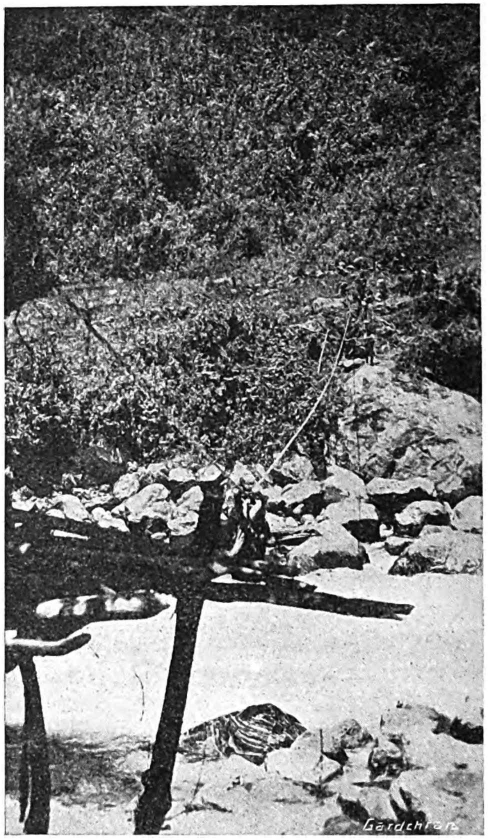

FIG. 240.—A MISHMI ROPE BRIDGE OVER THE DELEI RIVER.

But I also found three real forest Primulas which did not run for the alpine stakes. The first was discovered while following down one of the gullies in the search for water—a notable addition to the Geranium-leafed Primulas. The flowers which are bright purplish-pink with orange or crimson eye (a bicolor peculiarity it shares with the dainty P. eucyclia) and frilled petals, are massed in compact heads containing a dozen or more flowers and a single plant may bear four or five scapes which stand up freely above the jungle of palmate leaves. These leaves redden in the autumn. This plant grew in teeming masses on the steep flanks of the heavily wooded gullies, near their heads, under the shade of Rhododendrons, Tsuga and Magnolia globosa. Lower down in the same gullies, where running water had washed the coat of soil off the striped gneiss, there appeared a fine, butter-yellow Primula which anyone might have mistaken for a short thick-set 'Sikkimensis.' When it first opened it possessed but one tier of drooping bells, with, perhaps, a hint of a second; an arrangement met with in many of the 'Sikkimensis' group (and others, *e.g.*, P. seclusa) attaining a record in some forms of P. microdonta alpicola, which are four stories high. Nor was there anything about the foliage to exclude 'Sikkimensis' affinity. But when the masker grew to a ripe old age, it was seen that it did but jest; the globular capsules, now in three tiers, lined with small, black seeds, marked it a 'Candelabra,' although our new sunny-yellow Primula was still a Rose by some other name. Its affinities are clearly with P. prenantha—which by the way, also grew on the grassy ridge beneath Bamboos and Rhododendrons—and still more with the Tibetan P. Morseheadiana. As for the former, it is a rather poor thing, of diminutive stature and narrow tubes—I collected seeds of it in 1926; as for the latter, collected in that paradise of Primulas, the Doshong La, in 1924, I have never heard that it throve in England.

The sunny 'Candelabra' was not common, and was invariably associated with the 'Geranioides' described above; the one began where the other left off, and if you met with hundreds of 'Geranioides' Primulas at the head of a gulley, you could bet with certainty on meeting a few dozen 'Candelabras' below.

The third forest Primula was also Geranium-leafed, twin brother or sister to P. septemloba, a poor thing with puny, purple flowers in weeping tresses. Well might they hang their diminished heads, having degraded the noble name of Primula. Yet, thanks to its woolly-whitened leaves, which are large and well-shaped, the plant looks decently tidy. I wonder if it really *is* P. septemloba—how odd that would be! Only after careful comparison of the specimens can a final decision be reached.

It is worth noting that the new 'Geranioides' described above and P. eucyclia, both of which grow in places damp and dark—the latter often growing on cliffs over which water is splashing and trickling—are practically glabrous. On the other hand, P. septemloba from the drier woods of north-west Yunnan, and its twin referred to above, as well as P. latisecta from the Tibetan forests, are all quite hairy; a hint for cultivators.

Just as the 'Candelabra' (which, by the way, was wholly without meal) and the glabrous 'Geranioides' were always found in company, so the hairy 'Geranioides' was always found in company with a red-flowered 'Sikkimensis,' of which more later.

One other Primula must be mentioned here—a dwarf 'Sikkimensis' with small, rounded, petiolate leaves and large creamy flowers. I know nothing more about its habits than that I found half-a-dozen plants on a grass slope at the back of a rock which stuck up from the forested ridge, like a fang. I never saw the plant again, although I searched many likely and unlikely places.

One of the commonest plants all along the upper part of the ridge and well into the alpine region, was the violet-flowered Omphalogramma Souliei. It grew here in countless thousands, just as it did in the Seinghku valley. In the dawn of spring a coral-red spear bayonets its way through the clogged earth, whence the snow has barely lifted its weight; then the big, violet flower opens, almost resting its chin on the ground. Lastly the leaves appear, and continue to grow all the summer, and the scape lengthens until the fruits may be twelve or fifteen inches high. But the plant is at its best when the tightly-packed clumps are first opening, with the violet flowers impaled on red spears.

The cliffs afford shelter to a few plants, including a spotted Fritillaria, a striped, white Lloydia, the yellow-flowered Diapensia Wardii in large, hard mats; Pinguicula alpina, a dark violet form of Isopyrum grandiflorum, Cassiope selaginioides, and a bristly Onosma whose flowers hovered between blue and red, and generally succeeded in being neither.

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* Previous articles on Mr. F. Kingdon Ward's Tenth Expedition in Asia were published in our issues of June 9 and 23, Vol. LXXXIII; July 7, 21; August 4, 25; September 1, 22; October 6; and November 3, Vol. LXXXIV; January 19; February 2, 16, 23; March 2, 16, 30; April 13, 27; May 18, 25; and June 1, and 15, 1929.

A purple Roscoea, probably R. humeana, flowered towards the end of June. In the forest there grew sparingly a species of Podophyllum remarkable for its large, peltate, polygon-shaped leaves. The flowers are nothing, but are followed in September by big, scarlet balloons, dangling in bunches beneath the green pentagonal roof. P. Emodi, however, is not found here; it haunts the drier forests over the ranges to the north and east. Another forest plant worth mentioning was a good species of Nummularia, which was common in the gullies where the woodland Primulas grew.

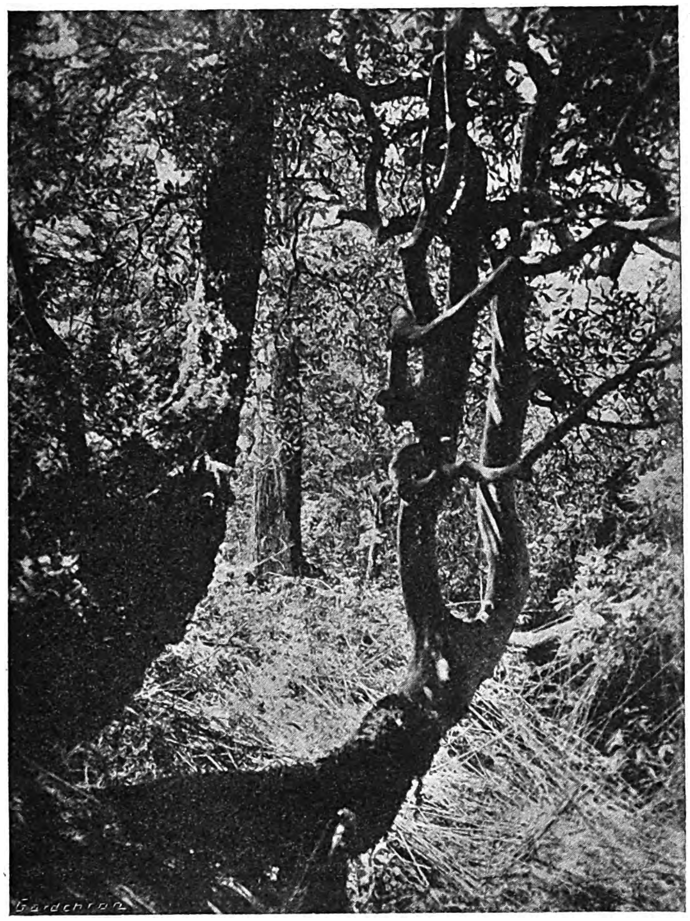

FIG. 241.—GNARLED BOUGHS OF TREE RHODODENDRONS.

Before we had been ten days in this camp, that is to say, early in June, we suffered another minor misfortune; our interpreter, Hubble, tired of drawing water, bolted, and we heard later from the villagers that he had returned to Denning. This defection had various consequences. We were reduced to one servant, our cook Luso, for the remaining five weeks, and there was no one to accompany me when I went out. But the loss of Hubble was most seriously felt in another direction. During the rains, drying paper in that saturated atmosphere with the rain always beating down and the mist sweeping through the forest, was a difficult business. We had built a small *basha* for the purpose, with a fire beneath; but the fire needed constant attention, either to keep it alight, or to see that it did not get out of hand. This extra work now fell on Luso, or on me; and although the water problem had by this time solved itself, Hubble's other job of cutting firewood, also fell on Luso. One day the long-expected event happened—we got a huge conflagration going in the paper *basha*, neglected it for a time, and set the whole thing alight; quite a lot of drying paper was consumed before the brigade arrived!

When Luso got fever, much of his work devolved on me; so that altogether I could by no means devote myself entirely to those pursuits which had brought me here. *F. Kingdon Ward.*

RULES AND RECOMMENDATIONS FOR THE NOMENCLATURE OF GARDEN PLANTS.

The Royal Horticultural Society, in view of the discussion which is to take place at the International Horticultural Conference in London next year, recently set up a Committee to reconsider the rules and recommendations which have been proposed from time to time for the naming of garden plants. This Committee has now reported, and we give below the text of their Report, which the Council has accepted.

I.—Introduction.

1. European botanists and most botanists outside Europe are guided in the naming of plants by the principles, rules and recommendations laid down at the International Botanical Congress of Vienna in 1905, in *Regles internationales de nomenclature botanique*, and extended at Brussels in 1910.

2. These rules and recommendations are framed:—
   (a) To avoid or discourage the employment of forms or names liable to produce errors or uncertainties, or to bring about confusion.
   (b) To avoid the creation of duplicate names.
   (c) To avoid the alteration of a name or combination of names except for weighty reasons founded upon a thorough knowledge of the facts, or the need of abandoning nomenclature contrary to the rules.
   (d) To deal with subsidiary but important points, such as grammatical accuracy, regularity and euphony.

3. The "Rules" point out that a name is given, not to express the characters or the history of the thing named, but as a means of understanding one another when speaking or writing of it.

4. The principles upon which the choice of a name is based are briefly, that:—
   (a) Each natural group of plants can bear but one valid name.
   Note. By natural group is meant the groups into which botanists divide the vegetable kingdom, viz., for example:—
      Divisions (Fungi, Spermatophyta).
      Classes (Dicotyledons).
      Families (Ranunculaceae, Papaveraceae).
      Genera (Ranunculus, Papaver).
      Species (bulbosus, repens, somniferum).
      Varieties.
   (b) The name, to be valid, must conform to the rules and is the oldest conforming name used after a date fixed for each division of the vegetable kingdom.
   (c) For all groups of vascular plants, nomenclature begins at the year 1753.

5. The rules and recommendations governing the form of names of species are, briefly:—
   (a) All species are designated by the name of their genus followed by a name termed specific. Thus all names of species consist of two words.
   (b) Generic names begin with a capital letter. Specific names begin with a small letter, except those taken from names of persons (*e.g.*, Anemone Halleri, Ceratostigma Willmottianum), or from generic names (*e.g.*, Brassica Napus).
   (c) Specific names taken from the name of a man are made by adding "i" when the name ends with a vowel (*e.g.*, Pittosporum Bureaui, or P. Mayi) except when it ends with "a" (*e.g.*, Balansa becomes Balansae); by adding "i" when it ends with "er" (*e.g.*, Kerneri); by adding "ii" when it ends with any other consonant (*e.g.*, Smithii). When taken from the name of a woman, the name is written in the feminine (*e.g.*, Cypripedium Hookerae, Berberis Wilsoniae).

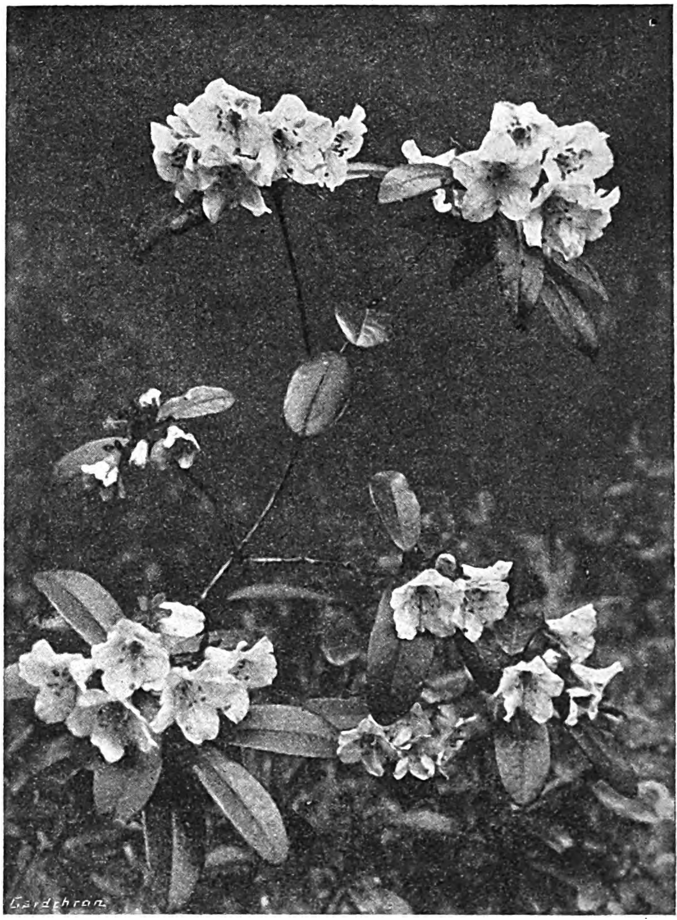

FIG. 242.—A HANDSOME BUSH OF RHODODENDRON SP., ALLIED TO R. TEPHROPEPLUM.

(d) The specific name is of the same gender as the generic, but most classical names of trees and shrubs are feminine, although they may end in "us," *e.g.*, Ranunculus bulbos*us*, Anemone nemoros*a*, Geranium pratens*e*, Dierama pendul*um*, but Quercus sessiliflor*a*). The most convenient guide to the correct spelling of plants names is probably *Index Kewensis*.

(e) Two species in the same genus cannot bear the same specific name.

II.—Difficulties arising out of a Strict Application of these Rules for Horticultural Purposes.

6. Botanical research brings about continual changes in nomenclature, and old names may be discovered and revived, or new combinations may be introduced at any time and may gradually come into general botanical use. To adopt such names as and when they appear in botanical literature would cause constant changes in catalogues and in labels in gardens, and to avoid this it is suggested that:—

(a) A list of names valid at the time it is made should be drawn up and should be good for, say, six years. It is imperative that this list should follow strictly the Rules of Botanical Nomenclature so far as species and botanical varieties are concerned, and that the names of plants generally accepted as conformable to the rules at the time of the making of the list should alone be used. All personal preferences and individual usage must be sunk if not in conformity with these rules. This list should be used universally in catalogues, horticultural literature and gardens for the fixed period.

(b) An International Committee should be appointed to revise this list in the light of botanical research at intervals of six years.

(c) Such alterations as are admitted at these revisions should be shown thereafter in catalogues for the next period with the superseded name as a synonym.

7. When the delimitations of a natural group are varied by different botanists, and there is a clear absence of concerted opinion in favour of one delimitation, the International Committee would choose the one best suited to the interests of international horticulture. For instance:—

(a) We are of opinion that the division of large genera in which fairly well marked groups are found, such as *Pyrus*, into Pyrus, Sorbus, Cydonia, etc.; *Prunus*, into Prunus, Amygdalus, Padus, Cerasus, etc.; *Berberis*, into Berberis and Mahonia, better meets horticultural needs than the retention of all the species in each under one generic name.

(b) Similarly, it may be found that what to some botanists are but subspecies of a large group species (as, for instance, *Saxifraga Friderici-Augusti*, *S. media*, *S. thessalica*, *S. montenegrina*, which are treated by Engler as subspecies or varieties of S. porophylla) are better treated for horticultural purposes as separate species.

These, being matters of personal opinion, should be decided by horticulturists for themselves, but it is essential that international agreement should be arrived at upon each name.

8. In addition to species and varieties occurring wild, horticulturists have to deal with varieties raised in gardens, and although these varieties are not in essence dissimilar from the wild varieties, yet their nomenclature is not fully provided for in the Rules. Special rules need, therefore, to be made for them. The principles laid down apply all through.

III.—Rules and Recommendations for Naming Horticultural Varieties and Hybrids.

9. Proposed rules and recommendations:—

(a) The name of a horticultural variety should be placed after that of the species to which it belongs, and its status should, or may be indicated by the contraction "var."

(b) It should be of Latin form, only when it expresses some character of the plant, *e.g.*, *nanus, fastigiatus, albus*, or its place of origin as, *e.g.*, *kewensis*. The use of Latin proper names for horticultural varieties is proscribed, *e.g.*, Iris pallida Smithii would be an inadmissible name for a garden variety.

(c) The name will thus usually be a "fancy" name, *e.g.*, *Galega officinalis* var. "George Hartland," not *Hartlandii*; *Dianthus deltoides* var. "Brilliant," not *brilliantissimus*; Pea "Masterpiece."

(d) "Fancy" varietal names should be in Roman characters, those of Latin origin, like those of species, in Italics.

(e) Varietal names must not be translated when transferred from other languages, but must be preserved in the language in which they were originally described. Where desirable a translation may be placed in brackets after the varietal name.

(f) As far as possible, names of horticultural varieties should consist of a single word; the employment of not more than three words is permitted as a maximum.

(i) Varietal names already in use for one variety of one kind of plant should not be used again for another variety of that kind, even although they may be attached to a different species. That is, *e.g.*, the use of the name Narcissus Pseudo-narcissus "Victoria" should preclude the use of "Victoria" as a varietal name for any other species of Narcissus, such as Narcissus poeticus "Victoria." Similarly, there should be but one Iris "Bridesmaid," one Plum "Superb," and so on.

(ii) Names likely to be confused with one another should be avoided, *e.g.*, the use of the name Iris "Alexander" should preclude the use of "Alexandra," "Alexandria" and "Alexandrina."

(iii) Where personal names are used to designate varieties the prefixes, as Mr., Mrs., Miss, and their equivalents, should be avoided.

(iv) Excessively long names and words difficult to pronounce should be avoided.

(v) The articles "A" and "The," and their equivalents, should be avoided in all languages, where they do not form an integral part of the substantive. *e.g.*, "Colonel," not "The Colonel" "Giant," not "The Giant"; "Bride," not "The Bride."

(vi) Existing names in common use should not be altered to conform to these rules, but attention should be paid to them in all new names proposed.

(g) The specific names of horticultural hybrids (*i.e.*, crosses between species) are to be expressed in one word in Latin or in any language written in Roman characters:—

e.g. Cypripedium × Goliath,
,, × Aylingii,
,, × nitens,
,, × burfordense,

are all of correct form.

All plants arising from the crossing of the same two species, either way, bear the same specific name.

The different forms of these hybrids are designated in the same way as horticultural varieties of species, but a specific name in the vernacular may not be followed by a Latin descriptive varietal name (*e.g.*, such a name as Cattleya × "Goliath" immaculata is inadmissible.)

(h) The generic name of a bigeneric hybrid (*i.e.*, a hybrid between species of two different genera) is designated by a formula showing the parental names in alphabetical order, or by the name of one of the parent genera, or by a name compounded of the names of both parent genera:—

e.g. Laelio-Cattleya,
Urceocharis,
Chionoscilla.

(i) Multigeneric hybrids (between species of three or more genera) are also designated by a formula and/or a conventional name preferably that of a distinguished person, to which is added the termination *ara*. Examples:—*Potinara* and *Vuylstekeara*.

Note.—The names for trigeneric hybrids already in use, *e.g.*, Brasso-laelio-cattleya, should be retained. All hybrids in which the same genera are combined receive the same generic name, no matter how they were combined; *e.g.*, the same generic name would apply to all combinations of the genera Brassavola, Cattleya, Laelia and Epidendrum.

(j) In order to be valid, a name must be published.

(k) The publication of the name of a horticultural variety or hybrid is effected by a recognisable description, with or without a figure, in English, French, German, Italian or Latin.

(i) The description must appear in a recognised horticultural or botanical periodical, or monograph, or other scientific publication, or in a dated horticultural catalogue.

(ii) The mention of a variety without description in a catalogue or in the report of an exhibition is not valid publication, even if a figure is given. It is desirable that descriptions of new varieties in horticultural catalogues should also be published in periodical horticultural papers.

10. It is suggested that the starting point for nomenclature of horticultural groups should be (a) some recognised horticultural monograph; or (b) an *ad hoc* list of varieties drawn up by a recognised body of specialists in the particular group; or (c) where such bodies do not exist, by some recognised Society which shall be specially charged with the work. Such lists should be kept up to date by (b) and (c) and additions periodically published through some recognised medium. It is also suggested that in each country the chief horticultural organisation should charge itself with the duty of transmitting all publications in which new varieties are described, and the accounts of all trials in its particular area to the body (b) or (c) concerned in maintaining the lists.

HARDY FLOWER BORDER.

LUPINUS POLYPHYLLUS VAR. MOERHEIMII.

What a magnificent flowering subject this beautiful herbaceous Lupin is! And yet it does not seem to enjoy the popularity it deserves, although there seems to be no reason why it should not be planted extensively.

In the first place it is an ideal Lupin for planting in the herbaceous border of limited size, for I think I am right in stating that it is one of the most, if not the most, compact-growing of the varieties of L. polyphyllus. Also, being compact in habit, it does not become so untidy as many, whose foliage takes on a rather bedraggled appearance as the season advances, and, under the most congenial conditions, I have not seen it raise its compact flower spikes to more than a little over two-and-a-half feet in height; two feet is usually about its limit. Added to these qualifications is another—a very important one—and that is, the flowers are of a rich rose shade, quite distinct and very pleasing, so that bearing all these points in mind, it must readily be admitted that L. p. var. Moerheimii is a first-class herbaceous perennial.

In the large herbaceous border it should be planted in groups near the front; a dozen plants together would not be too many, for it lasts in flower from early June throughout the greater part of the summer, especially if the flower spikes are removed so soon as finished. It is also very effective if used as a bedding plant, a whole bed planted solely with it producing a very telling effect in the summer flower garden, the erect flower spikes rising in their masses above the compact clusters of rather light green foliage.

L. polyphyllus var. Moerheimii has been long enough in cultivation to have become better-known, for it was introduced into cultivation by Messrs. B. Ruys, of Dedemsvaart, in 1906-7. *W.*

SALVIA VERBASCIFOLIA.

UNDER the above name, which may not be the right one, I have been growing for many years an interesting Labiate. A herbaceous perennial, this plant has thick, fleshy roots, and sends up in spring grey-green, downy leaves, which are narrowly oval in shape. Their upper surfaces are curiously wrinkled and the underparts, which are deeply netted with veins, are covered with a thick, creamy felt. Since these leaves are often well over one foot long and about half as wide, the plant has its attractions as a foliage subject. But before the leafage is fully developed several flower stems of one foot to two feet in height ascend from the centre of the tuft. Upon these are borne pendulous, tubular flowers of the typical Salvia pattern. The corollas are about the size of an average Foxglove bell. They are pure white, but have a faint etching of violet at the throat, which is hairy.

S. verbascifolia is hardy and quite permanent in a really well-drained, light soil. Excessive winter moisture is liable to cause root-rot. Propagation may be carried out by division of old clumps, but seeds, which are produced freely, provide the better way, for the plant resents disturbance. The seeds, moreover, germinate very easily, and I have had open-ground seedlings bearing flower spikes when only a year old. *A. T. J.*

FRUIT GARDEN.

TAR DISTILLATE WASHES.

DURING the past five or six weeks I have visited several gardens and orchards where the fruit trees had been sprayed with one or other of the various forms of tar distillate for the destruction of winter moth eggs, but which gave varying results in the same garden or orchard. One case was particularly disturbing. A five per cent. spray of a well-known brand gave a perfect kill in one plot, while it failed absolutely in the plot next to it. The trees in this plot, planted with Cox's Orange Pippin, had scarcely a whole leaf left on them. I was assured that one man did all the mixing, and that the same men did the spraying; yet in the one plot the trees were reasonably clean, while in the other the trees looked as though a fire had passed through them, so brown and leafless were they in appearance.

Unfortunately, no record was kept of the dates of the various sprayings, for, if so, the weather which immediately followed, such as rain or severe frost, could be ascertained, and possibly something valuable would have been discovered. The spraying, I was told, was carried out on two dates, and the weather, although windy, was mainly dry.

It is generally recognised that if rain comes during spraying operations, those trees on which the spray has not become dry had better be sprayed again when the conditions are right; but I do not know of any statistics which give the exact number of hours between spraying and rainfall which nullifies the effect of spraying. If rain has a nullifying effect on tar oil washes, what effect has frost? Is it not possible that the five per cent. wash put on the Cox's Orange Pippin trees in that orchard was followed by a hard frost? It seems the only conclusion at which one can arrive in the circumstances.

In each case the fruits were attacked and rendered useless, as well as the foliage, so that two years must elapse before the trees have recovered sufficiently to bear a crop of fruits. Obviously the grower should have been on the alert and sprayed with arsenate of lead during the "pink blossom" stage, or immediately the bulk of the petals had fallen, in anticipation of the March moth larvae. This moth does not appear before the end of February at the earliest, by which time it is considered dangerous to apply tar washes. The grower's only alternative is to keep the bands "sticky" on his trees to catch the female moths ascending, or to rely on a "pre-blossom" spray with arsenate of lead.

This loss of foliage to the trees must consequently have a very serious result and every endeavour should be made to get the trees to make some growth. In the first place the trees should be cleansed with some soapy mixture to which has been added a little nicotine (chiefly to rid the trees of Apple sucker and aphis, as the caterpillars are, by this time, pupating in the ground), and the soil to the full extent of the tree's roots should receive a thorough soaking of clear water. Nitrate of soda or sulphate of ammonia may be applied advantageously now to encourage wood and leaf growth and, later on, an application of superphosphate and potash should be given to bring about firmness and early maturity in the young wood. *H. H. C.*

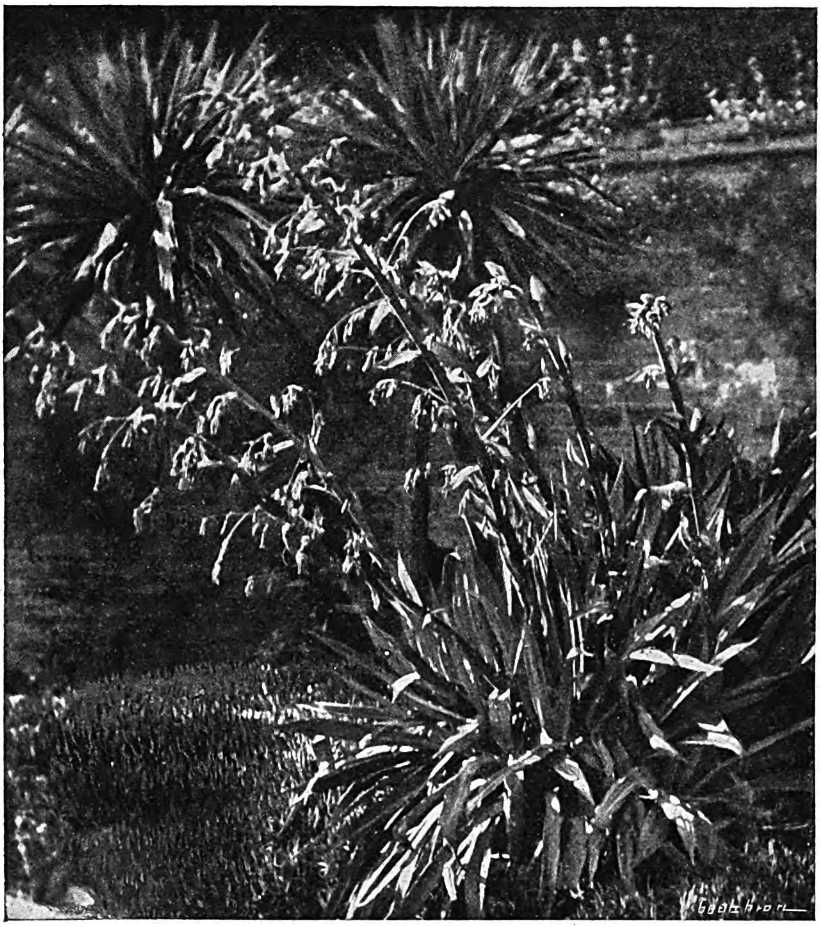

FIG. 243.—BESCHORNERIA YUCCOIDES AT VILLA ST. GEORGE, TORQUAY.

HOME CORRESPONDENCE.

Vacation Employment for Undergraduates.—The enormous extension of facilities for University education in England has produced a phenomenon strange to us, but familiar enough in the United States and Canada, and not unknown even in Scotland. In America it is common for men and women undergraduates to spend their vacations in some form of paid occupation, thus enabling them to earn their keep during the summer months. In England this has been practically unknown, except for the few senior scholars who have coached the sons of the well-to-do for school or university examinations. There is a limit to the number of wealthy parents anxious for the mental attainments of their children and the number of opportunities for private coaching, never very great, is now quite inadequate to absorb the number of undergraduates from the old and the modern Universities, who come very often from lower-middle or working class homes, and who are anxious both to gain experience and to earn a living wage during July, August and September. Applications are now reaching us from undergraduates all over the country who wish to find such temporary employment. But in a country where this is not traditional, where are we to find the firms or persons who will offer them posts or consider their employment during a seasonal rush period. Generally, they are willing to do almost any kind of work, as labourers, shop assistants, waiters or waitresses, governesses and so on. Some of the senior science students might be capable of acting as works' chemists or physicists to replace staff on holiday. There is obviously a great number of ways in which they might usefully be employed to their own advantage and possibly also to the ultimate advantage of industry. We have every desire to avoid the displacement in any way of normal or regular labour, but if there are any employers who, while bearing in mind this cardinal point, might still be able to offer temporary employment to university men or women, we should be deeply grateful to hear of them. *Ralph Nunn May, Secretary, The National Union of Students*, 3, *Endsleigh Street, London, W.C.*1.

The "Gardeners' Chronicle of America."—The many readers of the American Horticultural journals on this side would rub their eyes when they read in your issue of June 15, p. 435, that your American namesake claims to be the only "all gardening" magazine in America. In turning the pages of the American magazine *Horticulture*, issued twice monthly, with Mr. Ernest H. Wilson, of the Arnold Arboretum, advisory editor, and including among its contributors W. N. Craig, T. A. Weston, T. H. Everett, Arthur T. Johnson, and other contributors to your columns, one can only wonder in what respect *Horticulture* is not an "all gardening" magazine. *Jonathan Fiona, Glasgow, S.*1.

SOCIETIES.

CHELTENHAM FLORAL FÊTE.

Readers of *The Gardeners' Chronicle* who are interested in our extracts from issues seventy-five years ago, will remember that the extract given a week ago referred to an exhibition held at Cheltenham. This is proof—if it were wanted—that fine flower shows are by no means new to the garden city of the Cotswolds. However, the old shows faded out, but seven years ago there was an extraordinary revival or resurrection of interest, thanks largely to the influence of the late Mr. John Cypher. The local Chamber of Commerce took the matter in hand, quite rightly assuming that a great flower show would be an additional attraction to, and a fine advertisement for the town. Mr. Cyril Cassidy is the Hon. Secretary, and much of the success already achieved is due to his untiring energy and organising ability. The Mayor and Corporation smile on this horticultural effort and loan the Montpellier Gardens as a show site—a beautiful site and practically in the centre of the town.

The show held on June 19 and 20 was a fine one, and hardy flowers of all kinds, Roses, stove and greenhouse plants, Carnations, Sweet Peas and table decorations were displayed extensively, while the trade groups were a host in themselves.

Special Awards.

The *John Cypher Memorial Cup*, offered for the best exhibit in the show, was awarded to Messrs. Sutton and Sons, for a beautiful exhibit of well-grown Sweet Peas, arranged in bouquets raised above a setting of cool moss studded with excellent Gloxinias. A few pots of Lobelia tenuior lent a touch of grace and colour that was very pleasing.

The *Cavendish Cup*, offered for the second best exhibit, was won by Messrs. James Cypher and Sons, with a large group of the stove and greenhouse plants for which this firm has long been famous. Having won this award on three occasions, the Cup now becomes the property of Messrs. James Cypher and Sons.

The Grocers' Cup, offered for the best display of Roses, was awarded to the Madresfield Gardens, Ltd., Malvern, for a well-planned Rose garden in which the value of Polyantha varieties was admirably demonstrated.

The *Master Builders' Cup*, offered for the best display of Sweet Peas, was won by Mr. J. Stevenson, Wimborne, with a bright display that included the varieties Model, Jay, Yadil, Bullion, Pinkie, Magnet, Wild Rose, Charming, Purity and Treasure.

The *Drapers' Cup*, offered for the best collection of hardy flowers, was won for the third time in succession by Mr. W. H. Walters, Colesborne, and it therefore becomes his property. Mr. Walters showed Primula Florindae in fine style, Polygonum alpestre, Meconopsis Baileyi, Roscoea cautleoides, Rheum Alexandrae, Irises and many other choice things.

The *Sunningend Cup*, offered for the best display of Carnations, was again won by Messrs. C. Engelmann, Ltd., Saffron Walden, and now becomes their property. This firm showed big sheaves of fine flowers of Laddie, Topsy, Ceres, Mrs. C. W. Ward and Sunny Boy.

The Gardeners' Chronicle Medal was awarded to Mrs. C. V. Butler (gr. Mr. A. J. Collins), Twyning Park, near Tewkesbury, for her first prize group of plants in the amateurs' section.

Competitive Classes.

Messrs. Prior and Son led in the large class for a display of Roses, with a bold and effective exhibit of sheaves and bowls of good blooms. Shot Silk, Etoil d'Holland, Geisha, Allen Chandler and Betty Uprichard were outstanding varieties. Mr. H. Drew, Longworth, Berks., came second, and showed Isobel, Shot Silk, Betty Uprichard and Lady Hillingdon, in good form.

A brilliant and educational display was made by the several competitors in the class for a collection of hardy perennial plants and cut blooms arranged in a space twenty-five feet by six feet. The first prize of £10, presented by the Corporation of Cheltenham, was won by Mr. G. F. Gullick, Salisbury, with a bold, tastefully arranged group of well-grown hardy flowers that included Gypsophila Bristol Fairy, Lilium monadelphum, L. croceum, L. Martagon, and L. umbellatum, Heucheras, Lupins, Delphiniums, Irises and Eremuri; second, the Gayborder Nurseries, Malvern; third, Messrs. Bowell and Skarratt.

The best rock garden or rock and water garden arranged on a space twenty-five feet by five feet, was the one produced by Messrs. Bowell and Skarratt, whose rocks were pleasing and well disposed, while their pool of Nymphaeas bordered by Mimuluses, was a delight, and Saxifrages, Violas, Primulas, Dianthuses and many choice alpines were pleasingly arranged on either side of a tiny alpine path; second, Messrs. J. C. Wheeler, Ltd., Gloucester; third, Mr. R. S. Milford, whose arrangement was a trifle flat, but contained some excellent Aquilegias, Primulas and Saxifragas.

Several artistic groups of plants were arranged in the class that allowed a display on a space of one hundred square feet. The chief award was won by Mrs. C. V. Butler (gr. Mr. A. J. Collins), Twyning Park, near Tewkesbury, with a capitally arranged group of well-grown Codiaeums, Dracaenas, Clerodendron fallax, Lilium regale, Carnations, Palms, Odontoglossums, and small Coleuses; second, Miss H. Huntingdon (gr. Mr. E. C. Pullen), Pershore, who showed Gloxinias and Hydrangeas extensively; third, Colonel Harford (gr. Mr. G. F. Clift), Cheltenham.

The Misses Fawkes were the most successful exhibitors of a dozen vases of hardy flowers, while Mrs. Mitchell led for six vases. Delphiniums were best shown by Mr. W. C. Blakeney; Lupins by Mr. A. Moore; exhibition Roses by Mr. F. Trinder; decorative Roses by Mr. R. Greshon and Mr. B. A. Bowers; Sweet Peas by Mr. H. Bates, Charlton Kings; and a group of one kind of garden flower, by Mr. W. C. Blakeney. The best display of hardy flowers, on a space twelve feet by four feet, was arranged by Captain H. Berford Pim, who had good Paeonies, Irises, Liliums, Anemones, Pansies and Ramondias; second, B. A. Bowers, Esq. (gr. Mr. F. Merriman), Cheltenham.

Floral Decorations.

The table decorations, in three classes, filled a large space and created a great deal of interest; the competition was very keen. These classes were open only to ladies.

In a class where any kind of flowers were permitted, Miss G. Bould, Cheltenham, led with a delightful arrangement of Sweet Sultans, Laelio-Cattleyas, Schizanthuses and Codiaeum leaves; this prize included the Martin Challenge Bowl; second, Miss G. M. Gillet, Dumbleton, who made effective and graceful use of small Oncidium sprays, Streptosolen Jamesoni, Kalanchoe, Echeveria sprays and cream-coloured Lupins; third, Mrs. R. C. Pownall, whose cool and novel design in Water Lilies, sedges and grasses, attracted a great deal of attention by reason of its departure from the orthodox. The lady, however, was not quite logical in the use of Maidenhair Fern and Asparagus—in the absence of these she might have won a higher position.

Miss G. M. Zelly, Winchcombe, won in the class for Sweet Peas only, with mauve and pink flowers; Miss E. J. Jones, second, with cream and lavender flowers; and Miss A. Yates, third, with mauve and cream flowers.

For a table decoration in Roses only, Miss A. Yates, Warminster, led with a fine display of yellow Roses; Mrs. Colston Hale, second, with Polyantha and large varieties; Mrs. J. Nixon, third, with yellow and pink blooms.

In the local class for table decorations, the prize winners were Miss G. Bould, Mrs. L. A. Rowley and Miss E. L. Jones, respectively; the first-named used pink Carnations and sprays of Plumbago capensis very effectively.

Non-competitive Groups.

As indicated, the trade growers turned up in force and produced a very fine effect. The following medals were awarded.

Large Gold Medals.—To Messrs. Sutton and Sons, for Sweet Peas and Gloxinias; Messrs. James Cypher and Sons, for stove and greenhouse plants and Fuchsias; and to the Madresfield Gardens, Ltd., for a Rose garden.

Gold Medals.—To Messrs. Hopwood, for a formal and trellis garden and hardy flowers; Messrs. James Kelway and Son, for Paeonies and Delphiniums; Messrs. W. H. Simpson and Son, for Lupins; Mr. W. H. Walters, for choice hardy plants; and to Mr. W. Wells, junr., for Delphiniums and other hardy flowers.

Silver-gilt Medals.—To Mr. C. Wall, for Carnations and Aquilegias; Messrs. Blackmore and Langdon, for Begonias and Delphiniums; Messrs. Toogood, for Irises; and to Mr. Coville, for Hydrangeas and other greenhouse plants.

Large Silver Medals.— To Messrs. Hewitts for Irises and Delphiniums; Mr. Barnfield, for Hydrangeas; Messrs. Maxwell and Beale, for hardy flowers; Mr. Harron, for Carnations, etc.; Mr. W. T. Payne, for Sweet Peas; Mr. H. Clarke, for hardy flowers; Messrs. Rich and Cooling, for hardy flowers; Mr. J. Milburn, for hardy flowers; and Messrs. Jarman and Co., for hardy flowers.

Silver Medals.—To Madresfield Gardens, Ltd., for Hydrangeas; Mrs. V. Fawkes, for floral paintings; Miss Marguerite, for floral designs; Mr. H. Beckitt, for hardy flowers; Messrs. J. White and Son, for hardy flowers; Messrs. Lowe and Gibson, for Irises; Messrs. Zambra, for hardy flowers; and to Mr. Herbert, for florists' and garden Pinks.

GUILDFORD AND DISTRICT GARDENERS'.

A party of about ninety members spent an enjoyable afternoon on June 15, when a visit was paid to the gardens of Mrs. Joicey, Sunningdale Park, on the borders of Berkshire. We believe these gardens had not previously been opened for such a visit. Mr. J. Dickson received the party on behalf of Mrs. Joicey, and with him was Mr. J. Mackay, gardener to J. J. Joicey, Esq., of Witley.

Sunningdale Park is beautifully situated, of great charm, and in altogether delightful surroundings. One visitor declared it to be the most beautiful place the Association has ever visited—which is saying a good deal.

The mansion of white stone, with fluted columns, stands on an eminence and commands pleasing views of the lawns and trees. From the front of the house the view is still more entrancing. Upon a terrace just below the lawn, rambler Roses are trained over a double row of arches, rising one above the other; below, there is an extensive rock garden in which boulders have been cunningly arranged to give the whole a natural appearance; and at the bottom is an ornamental Lily pond of considerable extent. Beyond the water the pleasure gardens rise again, and the lawns are studded with flower beds and specimen trees, including Deodar Cedars, Sequoias, Sophoras, Picea pungens, golden Cupressus and others.

The glasshouses were well filled with a wide range of subjects—Peaches, Strawberries and Melons were temptingly ripe, with others coming along in succession. In one house the Grapes were remarkable for the uniformity of size and shape of all the many bunches of fruits. Those devoted to flowers were equally attractive. Streptocarpuses, Hydrangeas and Calceolarias were particularly good. There was also a fine collection of Carnations, Bessie Greenfield, bright scarlet, being conspicuous. One house was devoted to old-fashioned plants, such as Clarkias, Pelargoniums, Calendulas, etc., and a striking feature in every house was a fringe of Lobelia.

Mrs. Joicey generously provided tea, which was served in a marquee erected in the park. Mr. Patrick, the President, expressed the thanks of the visitors to the venerable lady for permitting the visit and for her generosity; thanks were also extended to Mr. Dickson for giving up his afternoon and compliments were paid him on the condition of the gardens. Mr. Mackay was congratulated upon the honour recently won at the Chelsea Show, in securing for J. J. Joicey, Esq., a cup for Orchids, won outright.

On the return journey a halt was made at Virginia Water.

The next outing is to Sir Richard Garton's garden at Lythe Hill, Haslemere, on July 13.

ROYAL HORTICULTURAL.

June 25 and 26.—There was a very good show at this fortnightly meeting of the Society in the new Horticultural Hall, Westminster. While Paeonies, Delphiniums and Lupins were the hardy flowers most freely shown, there were also plenty of other seasonable border flowers and alpines exhibited, and several interesting collections of greenhouse plants. The Floral Committee recommended six Awards of Merit to novelties. Orchids were not quite so numerous as of late, and there was no novelty worthy of award. Vegetables were represented by a good collection of Lettuces, but beyond this, the members of the Fruit and Vegetable Committee found nothing to occupy their attention.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Secretary), Prince Shimadzu, Sir J. Rutherford, Mr. Fred J. Hanbury, Mr. Lionel de Rothschild, Mr. R. G. Thwaites, Mr. T. Armstrong, Mr. J. Cowan, Mr. Charles H. Curtis, Mr. H. H. Smith, Mr. H. G. Alexander, Mr. J. E. Shill, Mr. A. Dye and Mr. F. E. Dixon, a visitor from the American Orchid Society.

Few Orchids were shown on this occasion, but it must be acknowledged that the Orchid growers have supported the fortnightly meetings nobly this season. Few novelties came before the Committee, but no awards of any kind were made.

Groups, etc.

Frederick J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead, had a pretty exhibit that contained the red Epidendrum prismatocarpum, a fine plant of Cypripedium Miss Faith H. Hanbury, Laelio-Cattleya Capulet, L.-C. Miss Faith Hanbury, Miltonia Kennie, M. vexillaria var. Snowflake, Dendrobium acuminatum and several capital hybrid Odontoglossums.

Messrs. Cowan showed Cattleya Model—a fine flower, Odontioda Grenadier, Cypripedium Curtisii, C. C. var. Sanderae, C. A. de Lairesse, and the large-flowered Odontoglossum Gloriette.

Messrs. Black and Flory staged a beautiful group of Miltonias, their leading sorts being M. Charlesworthii, M. Lyoth, M. Kennie in variety and M. Venus. The plants were nicely grown and prettily arranged, but a few Ferns on the staging would have provided a more pleasing effect. Messrs. Stuart Low and Co. contributed a few Orchids, including Phalaenopsis Luedemanniana, Miltonias, Odontoglossum Williamsianum, Laelio-Cattleya Aphrodite and Epidendrum Medusae, with two of its curious flowers.

F. Mercer, Esq. (gr. Mr. Bond), Clovelly, Steyning, showed a large Miltonia vexillaria carrying a score of spikes; had the spikes been staked out more widely the specimen would have looked more elegant, instead of crowded. The old Odontoglossum apterum was shown by Messrs. Sanders, who also exhibited the rare Lycaste tricolor.

Floral Committee.

Section A: *Present:*—Mr. Henry B. May (in the chair), Mr. G. W. Leak, Mr. J. F. McLeod, Mr. A. Turner, Mr. C. E. Pearson, Mrs. E. Wightman, Rev. Rollo Meyer, Mr. Courtney Page, Mr. M. C. Allwood, Mr. J. B. Riding, Mr. W. B. Gingell, Mr. J. M. Bridgeford, Mr. W. Howe, Mr. David Ingamells, Mr. D. B. Crane, Mr. George Churcher, Mr. R. Findlay, Mr. E. R. Janes, Mrs. Lindsay Smith and Mr. W. D. Cartwright, Secretary.

Section B: *Present:*—Mr. C. T. Musgrave (in the chair), Mr. G. Yeld, Mr. J. Hudson, Mr. G. Reuthe, Mr. G. Harrow, Mr. A. Bedford, Mr. Amos Perry, Mr. R. Cory, Mr. J. Comber, Mr. F. G. Preston, Mr. Mark Fenwick, Mr. E. H. Wilding, Mr. W. B. Cranfield, Mr. L. R. Russell, Mr. E. Marsden-Jones, the Marquess of Hartington, Mr. C. Williams, Mr. T. Hay, Sir William Lawrence, Bart., Mr. G. W. E. Loder and Mr. N. K. Gould, Secretary.

Awards of Merit.

Lobelia The Marvel.—A grand plant for bedding purposes or for pot culture, of compact and bushy habit and very free-flowering. The plants shown were about ten inches high and were laden with double, rich blue flowers. Shown by Mr. Philip Ladds.

Rose Duchess of Atholl.—The flowers of this grand Rose are of perfect shape and rich reddish-orange in colour, the bases of the petals and the outer ones being of rather lighter shading. Shown by Messrs. Dobbie and Co., Ltd.

Streptanthera cuprea.—A delightful little South African member of the Natural Order Irideae, attaining a height of about six inches, in foliage similar to a dwarf Tritonia. Its flowers, which are about one-and-a-half inch in diameter, are pale terra-cotta, with a central purplish zone edged with dark bands. A very bright and attractive subject. Shown by Mr. Amos Perry.

Rhododendron Houlstonii.—A single truss of this beautiful Rhododendron was shown. It was compact, and the individual flowers, about three inches across, were pale shell-pink in colour, daintily frilled and of good texture. Shown by E. M. Preston, Esq. (gr. Mr. C. F. Wood), The Warren, Hayes, Kent.

Pentstemon strictus.—This charming plant from North America was shown under the name of P. comarrhenus, which, according to *Index Kewensis*, is synonymous to the above. The flowering sprays shown were about two-and-a-half feet high, the smooth stems being furnished below the inflorescences with glaucous-grey, sagittate, clasping leaves. The flowers are rosy-lavender in colour, with paler tubes. Shown by Mr. T. Hay, Hyde Park.

Oenothera trichocalyx.—This beautiful species has very attractive, narrow, toothed, grey leaves with prominent white midribs, and large, pure white flowers shaded with primrose-yellow at the throat. Judging by the inflorescences shown, it would appear to be very free-flowering. Shown by Mr. T. Hay.

Cultural Commendation.

To Captain B. Symons-Jeune, for grand specimen plants of Saxifraga Tumbling Waters, with nearly twenty enormous drooping inflorescences, some of which were quite two feet in length.

For Trial at Wisley.

Delphinium Blue Gem.—An extremely handsome, tall, branching spike of large, vivid blue flowers. Shown by Messrs. Blackmore and Langdon.

Antirrhinum Sutton's Gem.—A new, distinct strain of dwarf Antirrhinums, obtained by crossing A. glutinosum with bedding sorts. The plants are of dwarf, spreading and bushy habit, forming close mounds of blooms. Several colour forms have been obtained, Pale Apricot and Pale Pink being exhibited as splendid pot plants.

Groups.

Carnations were shown in very good quality. Immediately inside the hall, Lady Emsley Carr (gr. Mr. J. T. Doe), Wonford, Walton-on-the-Hill, exhibited an uncommonly good group of floriferous plants. Their customary collections of cut blooms were staged by Messrs. Allwood Bros., Messrs. C. Engelmann, Ltd., and Messrs. Stuart Low and Co. The last-named also showed a small collection of greenhouse plants. Messrs. B. Ladhams, Ltd., filled a small table with very good border Pinks, and Messrs. Hayward and Son also staged border Pinks. Messrs. Chaplin Bros. included their new variety Pink Climber in a collection of Roses, and Mr. J. H. Pemberton had a pleasing exhibit of H.T. varieties.

In the centre of the hall, Messrs. Carter and Co. set out a handsome circular group of Clerodendron fallax and well-coloured Coleuses. The Clerodendrons were sturdy plants, which evidenced first-rate cultivation. Mr. T. Bones showed several interesting varieties of dwarf Lobelia. Mr. H. A. Brown had a selection of greenhouse Fuchsias of useful sizes. The Rolvenden Nurseries again had a very large exhibit of their excellent Statice profusa var. superba, and Messrs. J. Cheal and Sons had early Dahlia blooms.

On a wall space, Messrs. Sutton and Sons set out an exceedingly interesting and valuable collection of Godetia seedlings. These were mostly of tall habit and bearing plenty of large flowers of pleasant colouring. They also included exceedingly dwarf plants of Antirrhinum Sutton's Gem, a Pale Pink, and Pale Apricot.

A very effective hardy flower exhibit was arranged by Messrs. B. Ladhams, Ltd. This was in the form of an herbaceous border, enclosed on three sides by a trim Yew hedge. The chief plants were Paeonies, Campanulas, Trollius and Gaillardias, with a small pool of Nymphaeas. Messrs. L. R. Russell, Ltd., also had a small pool of hardy Nymphaeas, and associated them with a rock garden planted with Sempervivums. At one end, they had various border flowers. Messrs. Waterer, Sons and Crisp had a large exhibit of Philadelphuses and many hardy plants, including Oenotheras, Erinus and other alpines. Messrs. Stuart and Son staged Iceland Poppies, Sweet Peas and border plants.

The decorative value of Saxifraga Tumbling Waters was well shown by Captain Symons-Jeune, who had excellent plants in a large brass vase. Campanula Pride of Exmouth was shown with Heucheras by Messrs. Hollambys. Messrs. Bakers staged various Primulas, Lupins and Delphiniums. In a neat rock garden, Messrs. Maxwell and Beale planted dwarf Rhododendrons and alpines. Messrs. Pulham and Son had a sandstone rock garden, and Mr. J. Robinson set out Saxifrages, Thymes, Primulas and Pinks in a Cumberland stone rock garden, while Mr. G. E. P. Wood planted Violas, Linarias, Pinks and other lovely plants. The Misses Hopkins showed border flowers.

Many interesting and decorative species of Alliums were grouped by Mr. Amos Perry, with Liliums and other plants. The Liliums included L. Martagon var. album, L. tenuifolium and L. Thunbergianum var. maculatum.

A large collection of Irises, Lupins, Liliums and Nepeta Mussinii was arranged by Messrs. Wallace and Co. Messrs. Patricks had a square group of Conifers and flowering shrubs. Mr. R. C. Notcutt grouped Brooms, Spiraeas, Escallonias, Potentillas and other shrubs. Messrs. C. H. Bloom and Son and Mr. Gavin Jones showed various border flowers. At the far end of the hall, Messrs. Dobbie and Co. set out sturdy, floriferous pot plants of dwarf Bush Balsams, with a few vases of the gorgeously coloured H.T. Rose Duchess of Atholl.

Delphiniums were shown extremely well by Messrs. Blackmore and Langdon, their finest sorts, in huge sheaves, being Purple King, Blue Bird, Lady Gwendolin, Constance, Norah Ferguson, Mrs. Foster Cunliffe, Lady Elizabeth and Lady Eleanor. Messrs. Kelway and Sons showed many good sorts in their extensive collection of Delphiniums, as also did Messrs. Hewitts, Messrs. Chaplin Bros., Ltd., and Messrs. R. H. Bath, Ltd., the last-named including several choice Paeonies in their display.

Paeonies were shown in grand style by Messrs. George Bunyard and Co., Ltd., their large bank of blooms including such good sorts as Alsace, Amathea, Madame d'Galtha, La Perle, Henry Demay and Lorraine, while outstanding Paeonies in the collection from Baggesen's Nursery were festiva var. maxima, Princess Matilda, Madame Calot and rubra var. triumphans.

Messrs. G. W. Miller had a small group of Paeonies, Pyrethrums and Heucheras in variety, while Messrs. Barr and Sons, in their mixed group, had large sheaves of Canterbury Bells, Paeonies and bulbous Irises, together with Gaillardias, Erigerons, Armerias and Nepeta.

Messrs. Kelway and Sons staged a collection of choice Paeonies, striking among which were Kelway's Lovely, Una Howard, Superba, Cyclops and Boule de Neige; while Messrs. L. van Leeuwen and Son, Ltd., also displayed an extensive collection of these seasonable flowers.

W. CUTHBERTSON, Esq., Duddingston, Midlothian, showed some giant inflorescences of several tall, bearded Irises, those of Bruno being simply magnificent, for the large, richly-coloured blooms were carried on stout stems three feet or more high.

From the R.H.S. GARDENS, Wisley, came flowering sprays of Buddleia alternifolia, Diervilla rosea var., and Pyracantha Rogersiana, the last-named demonstrating well the remarkable floriferousness of this shrub under congenial conditions.

Fruit and Vegetable Committee.

Present: Mr. J. Cheal (in the chair), Mr. W. H. Divers, Mr. Edwin Beckett, Mr. F. Jordan, Mr. A. Poupart, Mr. E. Neal, Mr. W. Poupart, Mr. P. A. Tucker and Mr. A. N. Rawes, Secretary.

GROUPS.

The only exhibit which the Committee had to consider was a collection of splendidly grown Cabbage Lettuces, of several distinct types and varieties, set up by Messrs. SUTTON AND SONS. Two good sorts with bronzed foliage were Satisfaction and Marvel; Favourite and Drumhead were noteworthy among those with crinkled foliage, while firm-hearting sorts included Veitch's Golden Queen, Golden Ball, Standwell, Improved Tom Thumb, All the Year Round, Matchless and Commodore Nutt.

CARDIFF GARDENERS'.

THE second Saturday afternoon outing of the season was held on June 15, when many members and their wives travelled by charabanc to Llantwit-Major, where an enjoyable picnic was held. The first stop was at Nash Manor, near Cowbridge, and through the kindness of Captain and Mrs. Carne, the party was conducted through these old-fashioned gardens. One of the chief features was the old Rose garden, where the beds are ornamentally encircled by well-kept Box edgings. Some ancient specimen Rose trees, estimated to be at least fifty years old, growing in these beds, were of great interest. The kitchen and fruit gardens were visited also. The party then proceeded to Llantwit-Major, where an enjoyable and interesting evening was spent.

ANSWERS TO CORRESPONDENTS.

NAMES OF FRUITS.—*A. M. S.* 3, Apple, probably Bismarck; 4, Apple, probably Bramley's Seedling. The spurs show signs of frost damage. Illustrations showing the effect of frost on the foliage of Apple may be found in *The Gardeners' Chronicle* of August 20, 1927 (p. 154).

NAMES OF PLANTS.—*K. Y.* Erodium malacoides; Rehmannia angulata.—*A. M. S.* 1, Taxus baccata, very like var. fastigiata; 2, apparently Taxus baccata var. horizontalis; 5, Sedum Sieboldii var. variegatum; 6, Iberis sempervirens; 7, I. sempervirens var. Garrexiana; 8, Asperula odorata, the Woodruff.—*J. P.* Tamarix tetrandra.—*D. I.* Pyrus torminalis, the Service Tree.—*H. B.* 1, Silene inflata (Catch-fly); 2, Hieracium aurantiacum var. rubrum; 3, Haemanthus albiflora.—*W. D.* 1, Achillea rupestris; 2, small specimen, but appears to be Achillea conjuncta; 3, 4, 5, Dianthus (cannot name garden hybrids); 6 to 11, small specimens, but all appear to be forms of Phlox stellaria.—*G. R. T.* Lycaste cruenta.—*Hortus.* 1, Syringa villosa; 2, Neillia opulifolia; 3, Ulmus campestris var. Louis van Houtte; 4, Acer platanoides var. maculatum; 5, Fraxinus Ornus, the Manna Ash; 6, Amelanchier canadensis; 7, Caragana arborescens; 8, Ulmus viminalis var. aurea; 9, Ulmus montana var. purpurea; 10, Ulmus nitens.

Communications Received.—G. G. H.—F. G. P.—C. L.—A. C.—W. F. A.—A. F.—F. J.—H. O.

MARKETS.

COVENT GARDEN, Tuesday, June 25, 1929.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.		s. d. s. d.
Adiantum cuneatum, per doz.	10 0–12 0	Lilium longiflorum, per doz.	18 0–24 0
—elegans	10 0–12 0	Marguerites, white, per doz.	16 0–21 0
Aralia Sieboldii	8 0—9 0	Nephrolepis, in variety	12 0–18 0
Araucarias, per doz.	30 0–40 0	—32's	24 0–36 0
Asparagus plumosus	12 0–18 0	Palms, Kentia,	30 0–48 0
—Sprengeri	12 0–18 0	—60's	15 0–18 0
Aspidistras	16 0–60 0	Pelargoniums, per doz.	9 0–18 0
Aspleniums, doz.	12 0–18 0	Pteris in variety	10 0–15 0
—32's	24 0–30 0	—large, 60's	5 0—6 0
—nidus	12 0–15 0	—small „	4 0—5 0
Cacti, per tray, 12's, 15's	5 0—7 0	—72's, per tray of 15	2 6—3 0
Crassulas, per doz.	24 0–27 0	Rhodanthe, pink and white	6 0—9 0
Crotons, per doz.	30 0–45 0	Roses, Polyantha, per doz.	15 0–18 0
Cyrtomiums	10 0–12 0	Verbenas, pink and scarlet, per doz.	9 0–15 0
Fuchsias, per doz.	12 0–18 0		
Heliotropes, per doz.	15 0–18 0		
Hydrangeas, white, per doz.	24 0–30 0		
—pink and blue, per doz.	24 0–36 0		

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Adiantum decorum, doz. bun.	9 0–10 0	Lilium longiflorum, long, per bun.	2 0—2 6
—cuneatum, per doz. bun.	5 0—6 0	— — short, per doz. blooms	1 6—2 0
Asparagus plumosus, per bun., long trails	2 6—3 0	—speciosum rubrum, long, per doz.	5 0—6 0
—med. sprays	2 0—2 6	— — — short, per doz.	2 6—3 0
—short „	0 9—1 0	Lily-of-the-Valley, per doz. bun.	18 0–30 0
—Sprengeri, bun. long sprays	2 0—2 6	Marigolds, per doz. bun.	4 0—6 0
—med. „	1 6—2 6	Myrtle, green, per doz. bun.	1 6—2 6
—short „	1 0—1 3	Nigella, blue, per doz. bun.	3 0—5 0
Carnations, per doz. blooms	1 6—4 6	Orchids, per doz.	
Coreopsis, per doz. bun.	2 6—3 0	—Cattleyas	18 0–30 0
Cornflowers, blue, per doz. bun.	1 0—1 6	Paeonies, red and pink, 6's, per doz. bun.	9 0–12 0
—pink, per doz. bun.	1 0—1 6	—white, per doz. bun.	9 0–12 0
Croton leaves, per doz.	1 9—2 6	Roses, per doz. blooms—	
Daisies, large white, per doz. bun.	2 0—3 0	—Columbia	3 0—4 0
Delphinium, blue, per doz. spikes	3 0—4 0	—Richmond	2 6—3 6
Ferns, French, per doz. bun.	10 0–12 0	—Yellow	2 0—3 0
Forget-me-nots, per doz. bun.	6 0—9 0	—Molly Crawford	2 0—2 6
Gaillardia, per doz. bun.	4 0—5 0	—Butterfly	2 0—3 6
Gladiolus, Blushing Bride, per doz. bun.	12 0–15 0	Scabiosa caucasica, per doz. bun.	5 0—6 0
—The Bride, per doz. bun.	9 0–15 0	Smilax, per doz. trails	4 0—5 0
—Peach Blossom, per doz. bun.	12 0–15 0	Statice, mauve, per doz. bun.	9 0–12 0
—Scarlet, per doz. spikes	4 0—5 0	—Suworowii, per doz. bun.	6 0–12 0
—Primulinus, per doz. spikes	3 0—3 6	Stock, double white, per doz. bun.	6 0–12 0
—large varieties, per doz. spikes	4 0—6 0	—double pink, per doz. bun.	9 0–12 0
Gypsophila elegans, white, per doz. bun.	4 0—6 0	—mauve, per doz. bun.	12 0–15 0
Heather, white, per doz. bun.	9 0–12 0	Sultans, white, per doz. bun.	6 0—9 0
Iceland Poppies, per doz. bun.	2 6—3 6	—mauve, per doz. bun.	6 0—9 0
Iris, Spanish, blue, per doz. blooms	0 9—1 0	Sweet Peas, various, per doz. bun.	6 0–18 0
— — white, per doz. blooms	0 9—1 0		
— — yellow, per doz. blooms	1 0—1 6		
— — mauve	0 9—1 0		
Larkspur, mauve, per doz. spikes	2 6—3 6		

REMARKS.—Supplies throughout this department have shown a general increase during the past week, especially among the outdoor blooms. Blue Irises are still a tremendous glut, and inferior grades are difficult to clear. White and yellow Irises, although in good demand, vary somewhat in quality and price. Gladioli are in excellent condition in various shades of pink, deep red and white. The Gandavensis Gladioli consists of The Bride, Blushing Bride, Peach Blossom, Nymph and Ne Plus Ultra. Carnations and Roses have shown a considerable increase in supplies, and the former are at the lowest price so far this season, although the demand for both has been good generally. Other prominent lines are Coreopsis, blue and pink Cornflowers, Delphiniums, Gaillardias, Gypsophila elegans, now in excellent condition; Lilium longiflorum, Nigella, Paeonies, from home-growers, Scabiosa caucasica, Stocks, double white, mauve and pink; Sweet Sultans, white and mauve; and Marigolds (Orange King). Sweet Peas are still somewhat varied in quality and all best grades are soon bought up at prices similar to last week's quotations. Pyrethrums are practically over for the season. Mrs. Sinkins Pinks are too numerous for present requirements, the variety Her Majesty being preferred because of its finer blooms which last longer and reach the market in a sounder condition.

In the pot plant department business continues very active, the bedding season now shows signs of finishing. Most growers have practically cleared their stocks. Plants such as are required for decorative purposes are still in good demand, the newest arrivals being Viscarias, blue and pink, some very fine Marguerites, and Verbenas in forty-eight's, also Polyantha Roses.

Vegetables: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Asparagus—		Mushrooms—	
—Devon	— 4 6	—cups, per lb.	1 0—2 0
—Evesham	3 0—4 0	—broilers	0 9—1 0
—Giant	10 0–14 0	Parsnips, per cwt.	4 0—5 0
Beans—		Peas, English, per bushel	5 0—6 0
—Worthing, finest, per lb.	0 9—1 3	Potatos—	
—Guernsey	0 9—1 6	—Jersey, per cwt.	— 8 0
Beet, per bag	4 0—6 0	—St. Malo	— 7 0
Cabbage, Spring, crates, 24's-30's	2 0—2 6	—English, per bushel	5 0—6 0
Carrots, French, per doz. bun.	6 0—8 0	Tomatos, English, per box of 12 lbs.—	
Cauliflowers, per doz.	3 0—5 0	—pink	7 0—8 0
Endive, French, per crate, 18's and 24's	4 0—6 0	—pink and white	7 0—8 0
Lettuce, per box 24's	1 6—2 6	—white	6 0—6 6
Mint, per doz. bun.	2 0—3 0	—blue	6 0—6 6
		—Guernsey	7 0—8 0
		Turnips, French, per doz. bun.	8 0–10 0

REMARKS.—In spite of the comparatively large quantities of Strawberries available, most departments report active conditions. In the hothouse fruit section, supplies generally are on the increase, and any reductions in price levels are due mainly to that reason. Supplies of English Cherries have been heavier, and values have declined. Italy is sending some heavy consignments of very handsome Cherries to London, against which our own produce looks rather poor, but these imported Cherries will cease to arrive by the week-end. Strawberries are plentiful and making good money, the recent weather being entirely favourable for their consumption. Gooseberries have been a fair market, except for very small berries, which are practically unsaleable. Tomato prices are firm and although quantities are fairly heavy, values are being maintained at good levels. Cucumbers are quoted at easier prices; probably the cheapness of other salads, principally Lettuces, is having its effect on Cucumber prices. Although the recognised date for the finishing of the Asparagus season is past, there is still a fair sprinkling; but Peas are now so reasonable in price that any Asparagus other than "Giant" is selling slowly. Mushrooms, owing to the heavy supplies and poor demand, are a weak section, but some improvement here is expected. French Beans are still doing well, although some are beginning to show signs of being past their best. New Potatos are comparatively cheap, and neither Jersey nor St. Malo produce is making much money; the few English Potatos are doing rather better.

GLASGOW.

Low prices and plentiful supplies stimulated business in the cut flower market last week. Carnations ranged in price from 1s. 6d. to 3s. per dozen; Roses, 2s. 6d. to 3s. 6d.; large-flowered Gladioli (Prince of Wales, etc.), 1s. to 1s. 6d. for 6's; small-flowered, 6d. to 10d. per dozen; Sweet Peas, 3d. to 1s. per bunch; Irises, 10d. to 1s. for 12's, and 2d. to 8d. for 6's; Paeonies, 1s. to 2s. for 12's; Anemones, 1s. 6d. to 2s. 6d. per dozen bunches; Lily-of-the-Valley, 1s. 9d. to 2s. 9d. per bunch; Nigella, 8d.; double Stocks, 1s.; Lupins, 3d., and Cornflowers, 2½d. Richardias were exceptionally cheap at 1s. 6d. to 2s. 6d.

The fruit market was more active than it has been of late, and Strawberries were in good demand at 8d. to 1s. per lb., with selected Southampton fruits at 1s. 6d. Home-grown Grapes sold at 2s. 9d. to 3s. per lb.; Melons, 3s. 6d. to 5s. each; Peaches, 1s. to 1s. 3d. each; English Cherries, 5s. (6 lbs.); Apricots, 10s. 6d. per box; Gooseberries, 3d. to 5d. per lb.; and Gages, 12s. 6d. to 15s. (22 lbs.). Apples were dearer at 17s. to 20s. per case for Jonathan, and 17s. to 18s. for Sturmer Pippin; Winter Nelis Pears realised 10s., and Grape Fruits, 40s.

Vegetable prices were steady, except for Asparagus, which declined in value to 10d. for small bunches and 2s. for large. Scotch Tomatos were worth from 10d. to 1s. 2d. per lb.; Lettuces, 1s. to 2s. 6d. per dozen; Cucumbers, 5s. to 7s.; Peas, 6s. to 8s. per boat; Beans, 1s. 6d. to 1s. 8d. per lb.; Rhubarb, 4s. to 5s. per cwt.; Radishes, 1s. 6d. per dozen bunches; Syboes, 3d. to 5d; Carrots and Turnips, 10d. to 1s.; and Mushrooms, 1s. 6d. to 2s. per lb.

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